

THE AMERICAN NEPTUNE

A QUARTERLY JOURNAL OF MARITIME HISTORY



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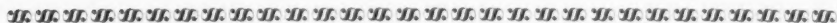
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PUBLISHED BY THE AMERICAN NEPTUNE, INCORPORATED
SALEM, MASSACHUSETTS

\$6.50 a year

\$1.75 a copy

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Entered as Second Class Matter, February 26, 1941, at the Post Office at Salem, Massachusetts, under the Act of March 3, 1879. Additional entry at the Post Office at Portland, Maine.

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Volume XVII. No. 2

April 1957

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SALEM, MASSACHUSETTS

Published by The American Neptune, Incorporated, Salem, Massachusetts

Printed by The Anthoensen Press, Portland, Maine

Collotype plates by The Meriden Gravure Company, Meriden, Connecticut

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A Quarterly Journal



of Maritime History

VOLUME XVII

APRIL 1957

NUMBER 2

I AM inspired to write a little about two collections of ship models which I recently revisited after not seeing them for several years. Many readers may not be aware that two small but extremely interesting and important collections of models are in New England art museums.

The twenty-four models at the Addison Gallery in Andover are unique as they were assembled to show the comparative sizes of famous or typical vessels. All of these models are built to a scale of one-quarter inch to the foot. At a glance one can see, and a startling sight it is, how such vessels as Henry Hudson's *Half Moon*, the Pilgrims' *Mayflower*, or Columbus' *Santa Maria* would look if moored beside the packet ship *Dreadnaught* or the famous clipper *Flying Cloud*. The ship *Monk*, a typical trader of 1805, can be compared with Thatcher Magoun, built a half century later, or the racing fishing schooner *Columbia*. Fulton's *Clermont* is dwarfed by Morgan's *Corsair*, and the schooner yacht *America* is small indeed beside the four-masted down-easter, *Savannah*.

But this collection is more than one for size comparison. Each ship is an example of the modern model builder's art as exemplified by such famous craftsmen, active in the mid-1930's, as Frederic W. Snow, Walter C. Leavitt, Alfred S. Brownell, Bernard S. Hart, Walter A. Simonds, H. Percy Ashley, the H. E. Boucher Manufacturing Company, and others.

Bartlett H. Hayes, Jr., Director of the Gallery, plans to publish a

handbook of this collection illustrating each of the models and on the opposite page a picture of the ship, preferably a photograph, but of necessity in the case of the earlier ships a painting or print will be used. The illustrations will be accompanied by brief text about each vessel.

The collection at the Museum of Fine Arts in Boston is quite different. Here one may see the most extensive collection of Admiralty-type models in America, excepting for the Rogers' collection in the Naval Museum at Annapolis. Besides these superb, large, lavishly carved, seventeenth- and eighteenth-century masterpieces, including Royal George, there are several first-class American models—perhaps the most famous is one of the two Boucher models of Flying Cloud (the other is at the Addison Gallery) and one of the two Spicer models of the U. S. Frigate Constitution (the other, also in Boston, is at the Old State House).

The Fine Arts models have recently been newly installed in beautifully lighted, softly tinted wall cases where their grace and handsomeness is magnified in the best modern museum techniques and manner.

Both of these collections deserve to be better known among maritime historians and lovers of fine ship models. Well kept and well exhibited they are easy to study and pleasant to look upon.

While on the subject of models it might be well to mention that nearly every New England coastal town has a local historical society and nearly every one of them has one or more models, either fully rigged or of the construction half-model type. Sometimes real gems turn up in these obscure places.

ERNEST S. DODGE

Peabody Museum of Salem



Early Great Lakes Steamboats *The First Propellers 1841-1845*

BY H. A. MUSHAM

THE year 1840 marked the opening of a new era in steam navigation. The decade that followed was a period of experiments, trials, and errors, and especially so on the lakes. While the steamboats there had reached a relatively high level of efficiency consistent with the shipbuilding materials and propelling machinery then available, there was much room for improvement in them. They were all built of wood, and, with the exception of a few stern-wheelers used in rivers and canals, were all side-wheelers. Both high- and low-pressure engines of various types were used, the walking-beam type predominating. The boilers were generally of the fire-tube type with large flues running from end to end. These varied in size and number, some boats having as many as seven. Steam pressure seldom exceeded fifteen pounds per square inch. The engines made up to twenty-five revolutions per minute. Some boats had two engines, each turning a wheel independently of the other. Wood was the only fuel burned. While coal had been brought to the lakes, it was too high in price and not widely enough distributed as yet to make its use practicable. The speed attained seldom exceeded the limit for economical operation.¹ This for the largest boats was from ten to twelve miles an hour.

The steamboats, especially those with decks built out on guards running from stem to stern and enclosing the side wheels, were well adapted to carrying passengers. But they were not so well suited for freight. The cubic capacity of the molded form² was reduced from fifteen to twenty per cent by the frames, planking, ceiling, posts, knees, and keelsons of the hull structure. Add to this the over-large space taken up by the engines, boilers, and woodbins amidships—the most capacious part of the hull—and the space occupied by the passenger accommodations below the main

¹ For the most economical operation, the speed for a steamer in knots should not exceed four-fifths of the square root of the length of the load water line in feet. Beyond that limit, increase in speed becomes more and more costly as the speed increases.

² In wooden hulls, the form of the outside of the planking.

deck, that left for freight was but a small part of the form. Again the excessive weight of the wooden hulls and of the large, slow-moving engines reduced the carrying capacity by weight materially.

The engines were practically all single-crank affairs with no means provided to balance their turning. On the upstroke, the piston speed slacked somewhat, on the down it accelerated, and the boat moved forward in surges. Side wheels attain their highest efficiency when the floats are immersed to an optimum depth. The desideratum of the ship and engine builders was to place the wheels vertically so that immersion was attained when the boat was at the load draft and at such point along the side, that they did not turn in the hollow of the bow waves set up by the boat at full speed. When the boat was in light condition, the immersion of the floats was less than desired and a decrease in speed resulted. When it was over the load draft, the wheels churned the water around and another loss in speed was the result. In heavy weather, rolling caused unequal immersion from side to side and the boat yawed and wobbled along on its course. Then when going into a head sea, the immersion again varied as the waves raced along the sides. This accentuated the surging of the boat. Rolling, pitching, and the surging of the engine produced a most uncomfortable motion in the boat to the discomfort of the crew and passengers. Added to these disadvantages was the vulnerability of the side wheel when applied to the warships of the day. With a large part of their machinery above the water line and the wheels exposed to direct gunfire, they were likely to be quickly put out of action no matter what position they could take when engaging the enemy.

There was but one answer to these problems and that was propulsion by submerged wheels, smaller engines for the same power, placed lower down in the hulls, and iron hulls. The idea of propulsion by submerged wheels was not new. Two ways of using them had been set forth by inventors and engineers, by the screw propeller and the horizontal paddle wheel. The screw propeller is an ancient device, but its first practical application for moving vessels was not made until 1836, when a small craft, *Archimedes*, built and fitted with a screw propeller devised by Francis P. Smith, ran successfully in England on the Paddington Canal and in September of the following year made a trip at sea from Ramsgate to Dover, and then steamed to London.

The horizontal submerged paddle wheel was developed by Lieutenant William W. Hunter, United States Navy.³ It was the usual vertical paddle

³ Hunter and Benjamin Harris of Norfolk, Virginia, were granted U. S. Letters Patent No. 2,004. Improvement in the manner of constructing and propelling steam vessels, dated 12 March 1841; antedated 2 November 1840.

wheel though much smaller, laid down on its side and mounted in a drum on a vertical shaft within the hull and below the load water line, the center being so placed that the outer rings and radial arms carrying the floats extended outboard through an aperture in the side a distance equal to their width. Each wheel was to be turned by a horizontal engine with a crank fitted to the upper end of the vertical shaft extending through the top of the drum. A boat was to have two wheels, one to each side. The hull was to be sponsoned out above the load water line to protect them from damage when docking or when coming alongside other ships.

Hunter succeeded in interesting Secretary of the Navy A. P. Upshur in his device. With the Secretary's cooperation he built a small craft and fitted it with his wheels at Norfolk in the spring of 1841, and named her *Germ*. She was 52 feet long, 11 feet wide and drew 2 feet of water. The paddles of the wheels had an area of 1 square foot and the engine, a power of 6 horses. On her trial trip on the canal near Norfolk she made 8 to 9 miles an hour.⁴

Hunter demonstrated *Germ* at Washington and other coast ports where her performances elicited much approval. He then took her up the Hudson to Albany and through the Erie Canal to Buffalo. There he put her through her paces on Lake Erie. The topographical engineers of the army, on duty there, took quite an interest in her. Later in the summer he took her back to salt water and down to Baltimore, after having successfully demonstrated the suitability of his device for service on sea, river, canal and lake. *Germ* was the first steamboat to pass from salt water to Lake Erie via the Erie Canal and return.

At this time there was no direct trade between lakes Erie and Ontario by steamers because they were side-wheelers, all too long or if short enough, then still too wide to pass the locks of the Welland Canal. There was direct steam connection between Montreal and Kingston via the Rideau Canal by small craft with stern wheels or side wheels mounted in recesses in the hull about amidship. But these boats were not suitable for service on Lake Ontario. There was therefore a need on these waters for a steamboat that could pass through these canals and safely navigate the lakes. If such a steamboat could be devised then the much desired direct trade, that between the lower St. Lawrence and Lake Ontario and between that lake and Lake Erie and the upper lakes, would become a reality. Hunter had demonstrated with his *Germ*, that such a steamboat was a possibility.

The traffic between lakes Ontario and Erie and the upper lakes was

⁴ *Niles National Register*, IX, 224, 240, 270.

handled by schooners and sloops of the largest size that could fit the locks of the Welland Canal. Accordingly these craft were less than 110 feet long overall, less than 22 feet wide and drew less than 8 feet of water. But sailing craft were not entirely satisfactory for the lakes, because of the calms that frequently prevailed and the violent storms that occasionally occurred during the open season. Then they were practically helpless in the ice of the spring and late fall. The lay of the lakes further had a marked effect on their use in interlake traffic. Fair winds on lakes Ontario and Erie could be head winds on Huron and Michigan and so on. Consequently the time of passage from lakes Ontario and Erie to Chicago was often a very uncertain matter. With luck it could be made in a week or two, otherwise it could take four and more. The solution to this problem was the submerged wheel, either Hunter's or the screw propeller. But Hunter was more interested in applying his device to ships of war rather than to those of commerce.

In December 1840, Captain Van Cleve was in New York City. While there he was called upon by Josiah I. Marshall, formerly of the firm of Bronson, Marshall & Company, of Oswego. Marshall informed him that their friend Sanderson of Brockville, Canada West, who operated boats on the Rideau Canal, had requested him to examine Ericsson's propeller⁵ and give him his opinion as to its application to propelling boats on

⁵ Contrary to the general impression in this country, Ericsson was not the inventor of the screw propeller, nor was he the first to demonstrate its practicability for propelling vessels or put it into successful commercial use. The screw propeller is an adaptation of Archimedes' screw for lifting water and of the shipjack used in chimneys to turn spits. In 1752, Daniel Bernoulli won the prize award of L'Academie des Sciences of France for his project for impelling vessels without the aid of the wind, by the application of the screw. In 1763, he made a mathematical analysis of its theory. From that date down to 13 July 1836, the date of Ericsson's first patent, a partial list of ideas and inventions relating to the screw propeller shows that he was anticipated by about 48 other inventors, among them David Bushnell, Robert Fulton, John Stevens, Jesse Ong and John B. Emerson, all Americans. Stevens built, engined, and operated *Juliana*, a small twin-screw steamboat about the size of a large launch on the Hudson between Hoboken and New York in 1804. Stevens' propellers were much closer in form to the modern type than Ericsson's. Ericsson's wheel was patented in England and the United States, was a very complicated affair, similar to that of an outboard motor, mounted abaft the rudder, on the center line of the vessel. The shaft passed through the rudder which was slotted to permit it to be turned.

Specifically it was made up of 'two thin broad hoops, or short cylinders made to revolve in contrary directions from around a common centre, each cylinder or hoop moving with a different velocity from the other; such hoops or cylinders being also situated entirely under water at the stern of the boat, and furnished each with a series of short spiral planes or plates,—the plates of each series standing at an angle the exact converse of the angle given to those of the other series, and kept revolving by the power of a steam engine.'

Ericsson did not claim the invention of the screw propeller, but did claim to have made the first application of the direct drive to it, that is, without the interposition of gears or other devices.

Ericsson came to the United States in 1839, at the urging of Captain Robert F. Stockton, U. S. Navy, who was in London on business connected with the Delaware and Raritan Canal, in which his family was interested. His attention was called to Ericsson's work in propellers by Francis B. Ogden, U. S. Consul at Liverpool. He was much impressed with the performance of *Francis B. Ogden*, Ericsson's experimental boat, and ordered him to build two iron boats fitted with his engines and propellers. Only one of them materialized, *Robert F. Stockton*, 70 feet in length, 10 in width, with a draft of 3 feet. She was driven by two single-cylinder engines set in a vee at right

the canal. Marshall said that as he had no practical experience in steam machinery, he wished him to go with him to the engine works of Messrs. Hogg and Delamater and examine the propeller hung there upon a shaft for the inspection of all parties interested and give him his opinion on it, which he would transmit to Sanderson.⁶

Van Cleve examined the propeller with great care and told Marshall that his opinion was that it would produce a revolution in the propelling of vessels and that it would bring about a complete change in the steam marine of the lakes. Marshall then introduced Van Cleve to Captain John Ericsson, the patentee who had rooms at the Astor House. After a conversation of about two hours, respecting the commerce of the lakes, Ericsson got up from his chair, walked two or three times across the room and made him the following proposition: 'Captain Van Cleve, if you will put a vessel in operation with my propeller on the Lakes within one year, I will assign to you one-half interest in my patent for all the North American Lakes.' Van Cleve accepted this proposition and the papers were drawn accordingly. He left for Oswego where he exhibited the model and the plans that he took with him. After a short time and after he had partially completed an arrangement to install a propeller in a vessel already built, he made an agreement with Sylvester Doolittle, merchant and shipwright who had a shipyard there, to build a new vessel, he taking a quarter interest, Doolittle a quarter, Bronson and Crocker, merchants and forwarders of Oswego a quarter, and Captain Rufus Hawkins a quarter.⁷ Bronson and Crocker operated a line of canalboats on the Oswego and Erie canals. The new ship, if successful, would extend this service to the upper lakes, by-passing Buffalo through the Welland Canal. A through service between New York and Chicago with transshipment at Oswego would then be a possibility. Doolittle, who recognized the value of the

angles to each other. Each cylinder had a diameter of 16 inches and an 18-inch stroke, and each drove one of two wheels mounted on two shafts, one turning inside and independently of the other. She was launched from the yard of Messrs. Laird & Company of Birkenhead on 7 July 1838. She made between eleven and twelve miles an hour on her trial trip. Stockton sent her across the Atlantic under sail. She arrived at New York on 29 May 1839 after a passage of 40 days. Soon after arrival she was taken to the shops of the Camden and Amboy Railroad at Bordentown, N. J., where she was subjected to many tests, particularly in her engines in which changes were made. It was found that the two propellers on one shaft and abaft the rudder made her erratic in steering. The double wheels were made into singles and the rudder was placed abaft them. She was renamed *New Jersey* by an Act of Congress in May 1840 and placed in service on the Canal in which she continued for about 30 years. She was the first screw-propelled vessel to be used successfully in commerce in the United States. The first American vessel to be fitted with Ericsson's propeller and the second to be commercially successful was the bark *Clarion*. She made seven and a half miles an hour on her trial trip on 4 April 1841. She successfully made a round trip from New York to Havana in May and June of that year.

⁶ James Van Cleve, 'Reminiscences of Early Sailing Vessels and Steamboats on Lake Ontario,' manuscript in Chicago Historical Society, p. 99.

⁷ *Ibid.*, p. 100.

propeller to the upper lakes trade, went to New York and arranged with Ericsson that he and his associates should be permitted to use his device without payment of royalty, on five vessels, the construction of which was to be promptly proceeded with.⁸ This was the beginning of the New York, Oswego and Chicago Line.

On 17 March 1841, the *Oswego County Whig* carried a notice to owners of vessels on the North American Lakes, that Van Cleve⁹ 'had the agency, being a joint proprietor in the right on the above waters of Ericsson's propellers,¹⁰ a recent invention by which vessels can be propelled in the absence of favorable winds, at the rate of seven miles an hour, at a trifling expense—thus enabling vessels to make about double the trips made with canvas only. The weight of the machinery necessary for a vessel of one hundred and fifty tons, including water in boiler, is five and a half tons. In point of speed, certainty and economy, this improvement cannot but be received most favorably by all interested, and is confidently recommended to their consideration.' For further particulars they were to apply to him.

The keel of the new boat was laid early in April in the Doolittle yard at the foot of West Cayuga Street. Van Cleve contracted with the firm of Dennis, Wood and Russell of Auburn, New York, for the engines and propellers which they built at the State Prison, the plans being furnished by Ericsson. Their cost was estimated at \$2,000.¹¹

Oswego was a city of 2,700 people at the time and its business and professional men were fully aware of the benefits that would come to it with reliable direct steamboat connections with Lake Erie and the upper lakes. The new steamer was an experiment. Their faith in her ultimate success was strengthened by the reports made in the local papers on the successful trial and voyage of *Clarion*.¹² The Oswego papers followed the construction of the new type of steamboat closely and pointed out that the new steamer and others to follow in her wake would put Oswego in a position to compete successfully with Buffalo for the western trade. Stated the *Oswego Palladium* of 24 March 1841: 'there is no place in the Union which will derive such immediate and extensive advantages from the invention of Mr. Ericsson as Oswego. It is affirmed by one of our first forwarding

⁸ John C. Churchill, LL.D., *Landmarks of Oswego County, New York* (Syracuse: D. Mason & Company, 1895), p. 165.

⁹ Herbert R. Lyons, *The Vandalia, The First Screw-Propelled Vessel on the Great Lakes* (Oswego: Oswego Historical Society, Fifth Publication, Palladium-Times, Inc., 1941), p. 99.

¹⁰ William Conant Church states in his *The Life of John Ericsson* (New York: Charles Scribner's Sons, 1890), I, 110, that 'on April 6, 1841, Captain James Van Cleve and Mr. Benjamin Isaacs purchased the rights to use the Ericsson propeller on the Lakes.'

¹¹ Lyons, op. cit., p. 107; J. F. Pankhurst, Esq., *Development of Ship-building on the Great Lakes* (New York: Transactions of the Society of Naval Architects and Marine Engineers, 1893), I, 255.

¹² See footnote 5.

merchants, that with the aid of this propeller, goods from New York by the Oswego route can be delivered at Cleveland, Ohio, at less cost than the actual charges which must be advanced upon freight in this transportation from New York to Buffalo. In the cheapness of transportation for the Western trade, the Oswego or Ontario route has always had a very great advantage over the inland or Buffalo route. A very clear admission was made of this by the general combination of forwarders last year in stating the charges by the Oswego route to be four dollars per ton less than by the inland route. The latter route however, has always had a great advantage over the Oswego in speed, and certainty in reference to time. The freight vessels from Oswego bound to the Upper lakes were all schooners. From Buffalo, a large proportion were steamers. The prevalent winds upon the lakes are Westerly. Perhaps in the season of navigation they are from that quarter more than two-thirds of the time. While therefore the descending passage from the Upper lakes to Oswego was usually as quick as was desirable, the ascending was often tedious and dilatory. This was a serious objection to Western merchants desirous of receiving their goods at early dates. They were desirous of dispatch and certainty and to obtain them submitted to heavy charges beyond those demanded on the Oswego route. But with the Ericsson propeller applied to our lake vessels, the Welland Canal becomes navigable for steam vessels and freights from New York by the Oswego route can be delivered at Cleveland as soon or sooner than they can be delivered at Buffalo. This, while the Oswego route will continue to enjoy all the advantage of its superior cheapness, it will equal the inland route and surpass it in speed.' Buffalo did not look upon these pretensions with equanimity. The press there took up the issue and in a short time the editors of the papers in both cities were slambanging one another with vitriolic editorials rich in sarcasm. The *Buffalo Journal* labeled the new steamer another Oswego Humbug. The *Oswego Palladium* answered this slander on 21 April 1841 by confidently predicting that this valuable improvement in steam power would transfer the forwarding business from Buffalo to Oswego and freely predicted the speedy ruin of that city. The new steamer was launched in the summer. Her owners with an eye to the western trade, named her *Vandalia*, after the former capital of Illinois.

Vandalia was completed in November. She was a twin screw vessel 91 feet long, 20.17 feet wide and had a depth of hold of 8.25 feet. She measured 138 19/95 tons and had the full form of the Welland Canal schooner. The engine and boiler were placed as far aft as they could go. The engine was of the high-pressure vertical type with two cylinders, each 14 inches in

diameter, with a 28-inch stroke. The cylinders rested on a base plate placed on a timber bed on top of the main keelson. The piston rods worked out of the cylinder heads on crossheads that moved in fore-and-aft guides and carried crossarms extending athwartships on each side to pins to which the upper ends of the connecting rods were attached. It was placed on the center line of the hull with the cylinders in a fore-and-aft position. Each crossarm carried two connecting rods, one on each end. Those of the after cylinder turned cranks on the propeller shafts, one on each shaft, while those of the forward cylinder turned gear wheels one on each shaft, an idler gear running between them to prevent undue strains on the crossheads and to steady the whole engine. The cranks and the connecting rod pin on the gear wheels were set at right angles to each other. The engine in general resembled that of John Stevens' *Juliana*. It occupied a space about six feet square and worked up to about 40 turns a minute developing about 50 horsepower. Very little information is available on the boiler other than that it burned about ten cords of wood for a day's operation. It was placed abaft the engine almost in the stern overhang. The propellers were about 6.33 feet in diameter and were mounted on long wrought-iron shafts that protruded from the hull, on each side of and forward of the rudder. The outer hoop of the original Ericsson wheel was left off and the inner hoop carried six paddles.¹³

She was sloop rigged and carried an extra large mainsail and two jibs. On the main deck abaft the mast was the main cabin about 50 feet long, fitted with accommodations for about 50 passengers. Aft of it was a small cabin over the engine room for the officers. A small, short smoke pipe protruded from it. The steering wheel was out on deck a few feet forward of the taffrail. Doolittle had done well by her. She was a staunchly built and sturdy craft. Van Cleve sold his interest to him during her construction. She was completed in November, and was the first steamer on the lakes of the New York, Oswego and Chicago Line. Towards the end of the month, the customhouse official at Oswego issued her a temporary permit and she left on her first trip—a sales demonstration trip—carrying 130 tons of merchandise for Niagara, Hamilton, and Toronto, with Captain Hawkins as master and a Mr. Taylor as engineer. Van Cleve and Doolittle were also on board.

While on this trip she put in at Port Dalhousie and proceeded up the Welland Canal to St. Catharines where she was received with enthusiasm. A public dinner was given to Van Cleve and his associates. The *St. Cath-*

¹³ Fans, floats, buckets or blades. Pankhurst, op. cit.: *History of the Great Lakes, Illustrated* (Chicago: J. H. Beers, 1899), I, 404.

erines' Journal reported that:¹⁴ 'she steers as helmsmen term delightfully—the movement of the screws assisting rather than retarding the operation of the rudder. This point was satisfactorily ascertained, in the circuitous route of the canal, from Port Dalhousie to St. Catharines where we had a full opportunity of testing the merits of this ingenious and novel invention. She glided along without any perceptible motion of the water;¹⁵ so that not the least injury to the banks of the canal need be apprehended from the swell of the water which arises from the paddles of an ordinary steamer. After passing one of the smallest locks¹⁶ on the canal at this place at ease, and staying an hour or two for the inspection of the inhabitants generally, she returned to Port Dalhousie on her route to Oswego.' She arrived at Oswego on 26 November.

On this trip the *Oswego Palladium* of 1 December reported: 'that it is with very high gratification we state, that her performance full equals the expectations of her owners, and the experiment has proved altogether successful. . . . As we have had some of our worst November weather since the steamer left the port, her owners have been able, on this first experiment, both to test the capacity of the engine, and her qualities as a sea boat. From information obtained from them, and her master, Capt. Rufus Hawkins, there is no doubt she is a capital craft for all weather. . . . It appears that she can make from six to seven miles an hour in ordinary weather without canvas. She had made nearly five miles per hour against the wind and sea: and on her return, ran the 150 miles between Niagara and Oswego in 18½ hours, having a light fair wind and using canvas in the first 30 miles, and making the rest of the course without canvas and the wind ahead. This is rather more than eight miles an hour, and as she improved after firing up, it may be safely inferred that she has not yet done all that she is capable of doing. In point of safety she seems to be all that human beings permit. The Captain considers her the safest vessel he has sailed in, and that the great danger of our lake navigation—a lee shore—is effectually provided against. . . . The successful result of this experiment, we consider the most important event in relation to the interests of this port and the trade of Lake Ontario, which has occurred since the opening of the Welland Canal. The great desideratum of a steam communication with the Upper lakes is now assured. . . . Our citizens have waited the result of this experiment of Messrs. Bronson & Crocker, etc., with no little solicitude, for they almost felt themselves partners in the

¹⁴ Lyons, op. cit., p. 107.

¹⁵ They all do at low speed.

¹⁶ Doolittle did better than Captain Augustus Pickering of Sackets Harbor who built a schooner that was to be the largest possible that could pass the canal. She turned out to be one inch too wide.

enterprise. The enterprise is as honorable as the result is gratifying, and we sincerely hope the "*Vandalia*" may contribute as largely to forward the interests of her owners, as she is expected to advance the interests of the port to which she belongs. We are firmly persuaded that this enterprise marks an epoch in the progress of the Western trade.'

Again on 8 December, the same paper reported: 'this splendid craft, since our last, has made two trips to Kingston. She performs to admiration. —Ericsson's propellers will work wonders for Oswego. They will add at least fifty percent to the value of property here. We understand there is to be a weekly line of these steamers next season between Oswego and Chicago. Five vessels will make a line. Those who first engage in this enterprise will no doubt make their fortunes.' After these two trips *Vandalia* was laid up for the winter.

Vandalia was enrolled at the customhouse in Oswego 14 April 1842, and left on the same day for Chicago. Captain Hawkins in command with freight and over thirty passengers. The fare to Chicago was from \$3.00 to \$4.00 less than from Buffalo to the same place. She put in at Buffalo where she was examined by all classes with much interest. She proceeded on her way reaching Cleveland on the morning of the twenty-third, where Captain Hawkins reported that her performance was very satisfactory. She remained there for a few hours and left for Detroit, arriving the next day. Now came the real test, the 660-mile run to Chicago up lakes Huron and Michigan. She reached Chicago on 1 May, where she was welcomed. The *Daily Chicago Democrat* for 3 May, carried the story: 'The STEAMER VANDALIA—This little steamer has excited considerable attention in our port, being the first one of the kind which has made its appearance here. She has Ericsson's Propellers instead of the ordinary paddle wheel, and travels at the average rate of seven miles an hour. In smooth water, it is said, she could attain a speed of ten miles per hour, but the friction would be injurious to the machinery. She is rigged like a sloop, and at a distance would readily be taken for one. The boat is moved by what is termed the screw paddle wheel, it being something between the buckets of the old paddle wheel and the ordinary auger, so that the propellers may be said in some measure to bore their way through the water. . . . The *Vandalia* is from Oswego, on Lake Ontario, at which place, we understand, three more boats of the same kind are being constructed, the whole to run as a regular line between that port and this.'

Taking on cargo and passengers she returned to Oswego, the round trip requiring about a month. The first trip to Chicago was a complete demonstration of the practicability of the screw propeller for both canal and

open-water navigation. So impressed with her were Messrs. Hollister, merchants and shippers of Buffalo, that Robert Hollister of that firm arranged with Van Cleve for the use of the Ericsson wheel on two new vessels which they were to build, though at a reduced price.¹⁷

It is apparent from Van Cleve's notice in the *Oswego County Whig* that he considered *Vandalia* as a sailing vessel with auxiliary steam power, but with her sloop rig with its large clumsy mainsail, she can be described more correctly as a steamboat with auxiliary sails. Though she could have been ten feet longer and still fit the locks of the Welland Canal, she was a complete exemplification of that basic principle of water transportation—the vessel should fit the route on which she operates. With her general arrangement, her engines of light weight, powered to drive her at an economical speed, and their location as far aft as it could be placed in the rim of the hull and the long open hold for freight extending almost the full length, she marked the opening of an era in shipping. She was the prototype, the pioneer of the modern bulk carrier not only on the Great Lakes, but on the seven seas as well. Five men coöperated in the production of this remarkable vessel: Van Cleve, steamboat captain and operator; Doolittle, shipbuilder, merchant, and promoter of vision; Bronson and Crocker, shippers and vessel operators, and Ericsson, engineer. It was altogether a rare and fortunate combination of talent, but of these men, Van Cleve and Doolittle deserve the most credit.

The second screw-propelled steamer on the lakes was *Chicago*, 150 tons, also built by Doolittle. She was similar to *Vandalia* and had the same power plant. She went into service in the upper lakes trade as part of the Bronson and Crocker fleet on 1 June 1842. On her the *Oswego Palladium* for that date commented: 'This beautiful and staunch vessel which has just been completed at the shipyard of S. Doolittle and propelled by the Ericsson improvement, leaves this port for Chicago.—She was built with particular reference to this route—has handsome and convenient accommodations for sixty cabin passengers, and is of sufficient capacity for 150 tons freight. She is to be commanded by our fellow citizen William S. Malcolm, whose nautical skill, experience and gentlemanly deportment eminently qualify him for that post.' It continued: 'We learn that the enterprising proprietors Messrs. Bronson and Crocker of Oswego, intend to dispatch a steam vessel of the above class for Chicago, on the 1st, 10th and 20th of each month, touching at the intermediate ports on Lake Erie, Huron and Michigan, thus affording unusual facilities for the conveyance and transportation of passengers and freight. It seems to us that

¹⁷ Van Cleve, op. cit., p. 102.

travellers, particularly families, moving with goods, will find this line of boats adapted to their wants. The price by this line is much less than by any other steam conveyance, which is a consideration in these times.¹⁸

Samson, twin screw of 250 tons, the first of the two propellers ordered by Hollister Brothers, was built at Perrysburg, Ohio, in 1842, by William S. Hubbell at a cost of \$15,000. She was similar in general to *Vandalia*, but about twice as large in tonnage and was intended for the upper lakes trade. The engines were of the high-pressure type, and similar to those of *Vandalia*. The cylinders were 14 inches in diameter and had a stroke of 28 inches. She had but one boiler. The propellers of the Ericsson type were 6 feet 4 inches in diameter. She went into service before the close of the season and made one of her round trips between Buffalo and Chicago in fifteen days, or at an average rate including stops of 5.3 miles per hour. A. H. Brown was the first engineer.¹⁹

Oswego, 150 tons, the third of the Oswego fleet of propellers was a duplicate of *Chicago*, and was built by Sylvester Doolittle in 1842-1843. She went into service on the Chicago run in the spring of 1843. On her the *Erie Observer* in June, reported: 'A boat bearing the name *Oswego* and propelled by the Ericsson plan touched here on Wednesday last. She left Oswego a few days before, came through the Welland Canal, and is bound for Chicago. In appearance the *Oswego* partakes equally of the qualities of the schooner, canal boat and steamer. She was very heavily loaded with freights and had nearly 300 passengers. Owing to the small amount of the fuel required to supply the engine, and the cheapness of the machinery, passengers are carried at prices far below those charged on the side-wheel type of steamboats. The steerage price from Oswego to Chicago, a distance of 1300 miles²⁰ is only six dollars. We understand that there are several large boats building on this plan, and we have no doubt that the enterprise will be successful.'²¹

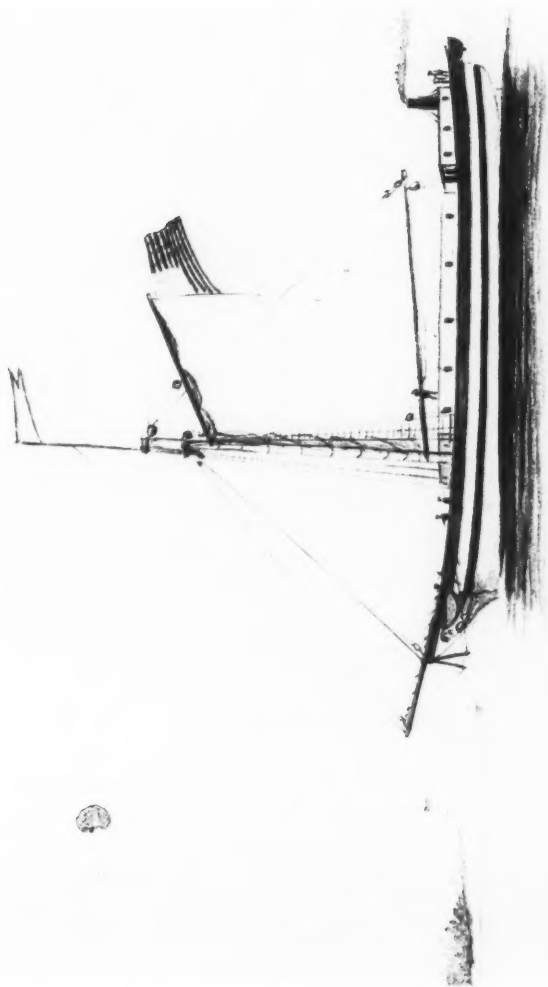
Oswego returned to Oswego from Chicago on 12 July, with 900 barrels of pork consigned to Messrs. Bronson and Crocker. This vessel, the *Oswego Palladium* for the same day reported: 'performed the trip from this port to Chicago and back discharging and receiving freight at nearly all ports on Lake Michigan and at Cleveland and Detroit, in 23½ days, being the shortest passage ever made. The distance traversed during this time by the

¹⁸ The depression which commenced in the panic of 1837 had not yet lifted.

¹⁹ Pankhurst, op. cit.

²⁰ 1,045 miles. Distances on the lakes are given in statute miles.

²¹ Dr. Harold D. Alford, *Shipbuilding Days in Old Oswego* (Oswego: Oswego Historical Society, Ninth Publication, Palladium-Times, Inc., 1945), pp. 75-76.

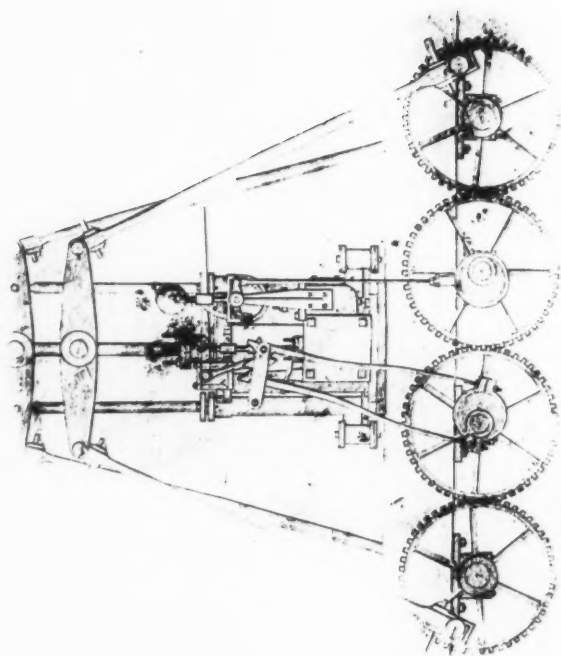


From a sketch by Capt. J. Van Cleve in 1841. — Pioneer Paper Co. Van Cleve

'Propeller Pandalia' painted by Captain James Van Cleve, 1841

The hull was painted white with a wide black stripe, a narrow black sheer line, and a gray water line. The rail was green, the deckhouses white, and the stem ornamented with a gold scroll. The boat and smoke pipe were black.

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Propeller van der Vliet.

*Built in Auburn New York River for the first Merchants Steam Ship
of the World - Designed invented & built under plan of Capt John Ericson*

Engine of Pandora

Original drawing is in 'Reminiscences of Early Sailing Vessels and Steam Boats on Lake Ontario,
presented to the City of Oswego by Captain James Van Cleve in 1877.

Reproduced by permission of the Chicago Historical Society

Oswego was about 3,000 miles—equal to a voyage across the Atlantic.'

Hercules, 275 tons, the second Hollister propeller, was built at Buffalo in 1842-1843, by Banta & Bidwell and cost \$15,000. Like *Samson*, her general arrangements were similar to those of *Vandalia*. She was built in the strongest manner and was 137 feet long, 25 feet wide and had a depth of hold of 8 feet. The engines were duplicates of those of *Samson* and were also built at the Auburn prison. With boilers wet and auxiliaries they weighed 15 tons. The two wheels were of the Ericsson type of the same size as those of *Vandalia*, and were fitted with eight paddles on the outer hoop. The paddles were of boiler iron $\frac{3}{8}$ inch thick, 18 inches broad by 30 inches long. Almost the entire hull was available for space for freight. The passenger accommodations were an improvement over those of *Vandalia*. There were fourteen staterooms in the main cabins, each six feet square, and additional space for the erection of 46 berths. She was fitted out in a superb manner, and was put into service in the freight and passenger trade of the upper lakes.²²

Chicago, the western terminus of the Oswego line, was no less interested in propellers than Oswego. The *Chicago Press* of 3 February 1843 noted that: 'Mr. James Averill from Maine has opened a shipyard in this city on the north side of the river near the North Pier.'²³ He is an experienced shipbuilder, and we trust his location will prove advantageous both to himself and this community. He is now building for Messrs. Bristol and Porter, and we believe Mr. C. Walker, a vessel to be moved by Erickson's propeller. She is to be 112 feet keel, 25 feet beam and 9½ in depth. She will be 250 tons burthen, and efforts will be made to complete her by June next. These steamers bid fair to supersede nearly all others on the Northern waters. The tonnage will be the same as that of those now being built on the Lower lakes. It seems that red oak of an excellent quality and well calculated for shipbuilding is obtained on the North Branch within ten miles of this city. It is quite equal to the white oak of Maine. In this respect, Mr. Averill has been agreeably disappointed.' On 21 April, the *Express* reported that the building of the Ericsson propeller was progressing tolerably fast. She was named *Independence* and launched in July, probably on the Fourth. She was schooner rigged with two masts and was fitted with twin screws each driven by a rotary engine. Her tonnage turned out to be 262 instead of 250 as intended, 12 tons to the good. Reliance was placed mainly on the sails, her speed as a steamer in calm weather being about four miles an hour. She was sent into service late in the season and

²² *History of the Great Lakes*, op. cit., I, 404.

²³ Just east of the north end of the bridge over the Chicago River at N. Michigan Avenue, today.

was successful as a sailing vessel. She was one of the first steam barges, if not the first on the lakes.²⁴

The first Canadian-built propeller was *London*, 150 tons, launched at Cobourg on 14 April, for Mr. Baker of that place and intended for carrying freight from there to Montreal. She had an engine of 25 horsepower and in general was similar to *Chicago* and *Oswego*.²⁵ *Adventurer*, 158 tons, was the second and like *London* was built for service between Lake Ontario and Montreal and other St. Lawrence ports. She was owned by the Toronto and St. Lawrence Steam Navigation Company. Early in October the papers reported her as the 'first steam vessel from Toronto to Quebec—'. The difficulties of the navigation of the St. Lawrence have been overcome. The steam propeller *Adventurer*, built expressly for the navigation of Long Sault Rapids, as well as the equally dangerous Rapids of Lachine, arrived in Quebec in three days with 700 barrels of flour on board and several passengers. This is the first steamer that has arrived at Quebec from Toronto, a distance of 500 miles, thereby opening to vessels of her class a navigation from the sea to Chicago, Lake Michigan, a distance of about 2,000 miles.' *Adventurer* was to leave on her return trip the day following her arrival at Quebec.²⁶

Porter was the largest propeller that came out this year and was the first to have but a single screw. Originally she had been *General Porter* built in 1833 at Buffalo and purchased by the Canadian authorities, who turned her into the gunboat *Toronto* during the Patriot War. She was sold to Captain Gager early in the fall of 1843. The *Buffalo Commercial Advertiser* reported that: 'this pioneer of the lakes which was recently repurchased from the Canadians has been expeditiously metamorphised into a fine propeller at a cost of \$3,000.00 and is now ready for service. On overhauling her, it has been found that her hull was in excellent preservation, and having been strengthened by the British for belligerent service, she will prove one of the staunchest vessels in commission,—Capt. Gager has obtained one of Ericsson's improved propellers, and by the aid of an experienced engineer, and a swarm of ship builders under Grisham, has converted this strong looking craft into one of the best vessels afloat. She is 400 tons burthen, and if there is wheat enough to be found in Wisconsin to load her, she will return with enough to dispell a famine. Of course her facilities for accomodating passengers will be in proportion to her

²⁴ A. T. Andreas, *History of Chicago, from the earliest period to the present time* (Chicago, 1884), II, 242.

²⁵ J. Ross Robertson, *Robertson's Landmarks of Toronto, A Collection of Historical Sketches of the old Town of York from 1792 until 1833, and of Toronto from 1834-1895* (Toronto, 1896), p. 879.

²⁶ *Chicago Daily Express*, 11 October 1843.

capacity for freighting.²⁷ On this, her first trip, she was damaged during a gale on Lake Erie but not seriously.

Other propellers that came out in 1843 were *Racine*, *New York* and *Emigrant*. The first two were built by Doolittle at Oswego for Oswego. These were the last of five contracted for with Ericsson. Both were of 150 tons and similar to *Oswego*. *Emigrant*, 275 tons, was the first propeller built at Cleveland and cost her owner, Sheldon Pease, \$15,900.

The first merchant propellers were sturdy ships and well fitted to stand the hazards of lake navigation. They were well handled as a rule and had but few accidents in the first years, but because of the low power of their engines they were not always under good control. In September 1842, *Chicago* collided with *Commerce*, both sustaining injury. In October 1843, *Independence* and *Bunker Hill* collided on Lake Michigan, south of Milwaukee. Both were damaged. The same month *Porter* was damaged in a gale on Lake Erie, while on her first trip. The following month *Chicago* ran on a reef near Mackinaw and sustained injury. None of these accidents were serious enough to retire any of them from service.

While they were steamers, they were really nothing but an adaptation of the schooner, steam being auxiliary to their sail power. Their engines were of very low power for the craft they were driving. They could keep them moving in calms and fair weather but could not force them ahead in the face of strong winds. At best they were slow in any kind of weather, five miles an hour being nearer to their actual speed than the seven and a half and higher reported. Notwithstanding this drawback they were successful and made money for their owners because of their low costs of construction, maintenance, and operation. A most important item in their operation was the low fuel bill, this per boat being about one eighth of that of much larger side-wheelers of the same freight capacity. Accordingly their passenger fares and freight rates could be lower. While not elaborately fitted for passengers, they did not lack for them. Now steamboats in the public mind were craft that were moved by large thrashing side or stern wheels which could be seen and heard. But here were boats that moved with very little of this noisy disturbance of the water, and instead were quietly propelled by a mysterious device,²⁸ referred to as a propeller which could not be seen. Moreover they were distinctive in appearance. Consequently they were known as propellers from the very first though they were steamboats just as were the side- and stern-wheelers. Nevertheless, to the public, side-wheelers were steamboats and those

²⁷ Ibid., 7 October 1843.

²⁸ It is still a mystery.

moved by propellers, were propellers. The distinction persisted down to the turn of the century.

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Notes on a Shallop

BY WILLIAM A. BAKER

SLOEP in Dutch, slup in Swedish, chaloupe in French, and shallop in English—but just what was it?

As with many things marine, the above terms were somewhat loosely applied at any given time. Considering what they meant at various times leads to considerable confusion, hence these notes will attempt to answer the question for the early seventeenth century only. We do know from many sources that, along with the pinnace, the shallop was a small boat type extensively employed by the early explorers and colonists of New England and other parts of our coasts. One of the better known of the early colonial shallops was that brought over by the Pilgrims in *Mayflower*. Cut down for stowage aboard ship, it was reassembled on the shore at what is now Provincetown and was used for the Pilgrims' first explorations along the shores of Cape Cod.

In spite of researches into colonial records by many historians and naval architects, we do not have a clear picture of an early colonial shallop. In fact, it is almost easier to say what a shallop was not. References to 'half a shallop' and to 'double shallops' only add to the problem. Lengthening and decking over could convert a shallop into a pinnace but this is part of another story. It is generally agreed that by the middle of the eighteenth century a typical New England shallop was an open boat propelled by oars and sails. Some had transom sterns while others were double-ended; both were usually fitted with two masts. The colonial shallop's descendants in comparatively recent times were such well-known New England types as the Hampton boat, the Crotch Island pinky, and the No Man's Land boat to name but a few.

When attempting to trace the history and development of any type of vessel three main features should be considered—form, construction, and rig. As the rig of a vessel is perhaps its most apparent feature, this category has been popular with the average researcher and nautical enthusiast. Studies of forms run a poor second while construction is hardly ever

mentioned, probably because of the scarcity of information and the fact that details changed but slowly with the passing of the years.

A point difficult to impress on the average nautical enthusiast is that, until the middle of the nineteenth century, rig had little if any connection with the designation of ship or boat types. Size, form, construction, or other considerations usually determined the type name rather than the means of propulsion. Classification by rig, while convenient in some respects, is akin to describing modern fishing boats by the type of motor installed—a Cape Unknown lobsterman has a Ford conversion but a Blank Harbor dragger must have a Gray Diesel—which tells little or nothing about the boats themselves. True, as time passed, certain rigs became associated with certain hull forms for special services such as fishing, coasting, river work, and the like but these are rather recent developments in history.

Among the other considerations that led to certain type names are the use or place of use, an unusual feature, or perhaps even the name of the first vessel to introduce certain features. The French 'chasse-maree,' the Dutch 'boyer,' the English 'boomie,' the Scotch 'zulu,' and the New England types mentioned above are typical. All these names meant something definite to their users, a definite type of vessel with which they earned their living, but the names meant little or nothing to others. If it were not for modern marine researchers the details of many such local craft would have been lost. So it was with the shallop, a common work boat for the New England colonists who knew what it was and had no reason to preserve a description of one for posterity. All through maritime history we find the same story; the large merchant and naval vessels have received most of the attention while the common work boats are scarcely mentioned in spite of the fact that the operations of the large ships and a substantial part of a nation's economy depended on them.

The obvious place to look for a definition or description of a shallop would be an old marine dictionary. Turning to the earliest English one, Sir Henry Mainwaring's *The Seaman's Dictionary* of about 1620, we find that 'shallop' is not listed but under 'boat' is the following:

The boat belonging to a ship is either called the ship's boat or the long boat. . . . Other small boats which they carry for lightness to hoist in and out quickly, are called skiffs or shallops, according to form. . . . A ship's boat is the very model of a ship and is built with parts in all things answerable to those which a ship requires, both for sailing and bearing a sail. . . .

This is not very helpful as under 'skiff' Mainwaring simply refers back

to 'boat.' But we do note that form has something to do with defining a shallop although it has not been possible to determine just how.

Boteler in his *A Dialogicall Discourse Concerning Marine Affaires* of 1634 of which the technical portion was derived from Mainwaring is scarcely more helpful:

It [the shallop] is small and lighter, and so a nimbler boat than the long boat, and the peculiar employment of it is to row speedily upon all occasions, from one place or ship to another; . . .

The *Dictionaire du Gentilhomme* by le Sieur Guillet, published at the Hague in 1686, gives the following definitions:

Chaloupe is a small vessel suitable for short passages and intended to serve and give communication between large ships (*vaisseaux*).

Canot is an *esquif* or small boat for serving a large vessel (*bâtiment*).

Esquif is a small boat for serving a vessel (*navire*).

In these we get tangled with the shades of difference between *navires*, *bâtiments*, and *vaisseaux*, but nevertheless a *chaloupe* seems to be a fair-sized craft capable of coasting voyages and the general duties of what today would be called a tender. A rough size definition might be that a *chaloupe* was a small boat just a little too large to be conveniently carried on the deck of a larger vessel.

Not until the late seventeenth century did printed plans of shallops appear, the earliest being in Witsen's great work on shipbuilding in 1671. In the absence of copyright laws in those days there was much plagiarism and the plans and descriptions were copied widely. The following two are from a compilation by David Mortier, *L'Art de Batir les Vaisseaux*, Amsterdam, 1719. The first, *Chaloupe d'un Grand Vaisseau*, freely translated is:

The shallop, for which a design is shown, is manned by the number of seamen necessary for rowing it and for performing various services for larger vessels. One may note the Master of the shallop who is in command, and who steers it, the Bow-man who pulls the forward oar, the oarsmen on both sides of the shallop ready to bring people aboard ship, or to shore, or to take them to another ship. She is also used to carry out the kedge anchor when it is necessary to use it, to bring aboard provisions, ballast, and other heavy things, to save men and cargo in case of shipwreck or other hazard at sea, and for a number of other particular services. . . .

The engravings accompanying this description show a transom-sterned craft having an over-all length of 27 feet 6 inches, a breadth of 7 feet 6 inches, and a depth of about 3 feet 6 inches. There are two fixed and three movable thwarts with benches at bow and stern. Provisions are

made for stepping one mast and for fitting leeboards. Thole pins are provided for five oars on a side.

The second description refers to a *Canot d'un Grand Vaisseau*:

The *canot* is a sort of small shallop intended to serve a large vessel and for about the same purposes as the foregoing. . . .

Although described as a kind of small shallop, the plans of this *canot* show a larger and huskier craft than the *chaloupe*. It is a double-ender with an over-all length of 30 feet, a breadth of 9 feet 3 inches, and a depth of 4 feet. There are two fixed and five movable thwarts, a raised platform forward, and a bench around the stern. A windlass is fitted at about mid-length for use in retrieving anchors. As in the case of the *chaloupe*, one mast and leeboards can be fitted.

The description in *Aubin's Dictionnaire de Marine*, Amsterdam, 1722, starts out as follows:

It is a vessel intended to serve and give communication between large ships, or for making short passages; although there are some that have made long ones and also voyages to foreign parts. . . .

and continues with a list of uses about the same as given by Mortier. While there are no illustrations of *chaloupes* or *canots*, dimensions and construction notes are given for several sizes of shallows, two in considerable detail. The first of these is a double-ender 32 feet in length with a breadth of 8 feet 9 inches while the second is a transom-sterned shallop having a length of 42 feet and a breadth of 9 feet. The former is fitted with one mast and leeboards, the latter with two masts and square sails but there is no mention of leeboards.

Although not actually a plan, there has been published a plate depicting various deep-sea and coasting-vessel types of Bayonne dated 1679. One of six small craft is labeled *chaloupe*, a double-ender scaling about 32 feet in length overall. A shelter is fitted over the middle part of the vessel to protect the cargo and there is one mast with what could be a single square or lug sail.

Additional descriptions and dimensions might be cited but there is little to be gained by just piling up details, hence it will be well to leave the technical material and turn to some actual user's reports of early colonial craft. For the shallop that was brought over in *Mayflower* we have two sources of information. *Mourt's Relation* states:

Monday, 13th November, we unshipped our shallop and drew her on land to mend

and repair her, having been forced to cut her down in bestowing her betwixt the decks, and she was much opened with the people lying in her, which kept us long there, for it was sixteen or seventeen days before the carpenter had finished her.

It might be noted in passing that while this was going on some of the colonists were employed in cutting timber for another shallop. When eighteen of *Mayflower's* company and crew finally set out in the repaired shallop to explore the shores of Cape Cod and to find a suitable location for establishing the colony there is the statement, '[we] got up our sails.' Later, when the shallop was in trouble off the Gurnet, it is noted that 'we split our mast in three pieces.'

Governor Bradford in his *Of Plimoth Plantation* mentioned that the shallop was stowed in quarters in the ship and was 'much bruised & shattered in the ship with foul weather' which puts it in worse condition than noted in *Mourt's Relation*. Later, in referring to the situation off the Gurnet, he stated, 'they bore what sail they could to get in' and 'But herewith they broke their mast in three pieces & their sail fell over board, in a very grown sea.'

Concerning other Pilgrim craft, Bradford mentions the efforts of a ship carpenter sent to Plymouth in 1624: '... he quickly built them 2 very good & strong shallops (which after did them great service), and a great and strong lighter, and had hewn timber for 2 ketches; ...' Later he wrote about one of the shallops that, '... bigger vessel they had none. They had laid a little deck over to keep the corn dry, but the men were fain to sand it out all weathers without shelter; ...'

Other notes concerning colonial shallops have been collected from colonial records and published by John Robinson and George Francis Dow in *The Sailing Ships of New England, 1607-1907* and by Professor E. P. Morris in *The Fore-and-Aft Rig in America*. As might be expected these refer more to the rig and handling of shallops rather than to form or construction. Referring to size and form Professor Morris summarized as follows:

Postponing for a moment the question of rig, the other characteristics harmonize easily; the shallop, having come over as a ship's boat, had become a type, an open craft, probably square sterned, of a size between the small rowboat and the decked vessel. The hesitation of Bradford between 'boat' and 'shallop' shows that size was an element in the meaning, and the use of the terms 'great shallop,' 'double shallop,' of craft as large as a pinnace shows that the typical form also was necessary.

Concerning rig, Professor Morris noted in addition to the *Mayflower* items the following which also seemed to indicate a single mast:

... one of the three 'ancient and skilful seamen,' whose shallop was capsized, 'had the sheet in his hand and let fly'; 'hoisted part of their sail'; 'to hand the sail.' ...

After this he adds:

But the passage from the *New Haven Colonial Records*, 'to have cast her by flatting her foresayle,' is conclusive proof that the shallop sometimes had two masts. ...

and there are a number of definite references to two masts in shallop descriptions of the latter part of the seventeenth century.



Fig. 1. Sketch of *Mayflower's* shallop under sail.

In this A.D. 1957 there again will be a shallop sailing off the Gurnet, but not, it is hoped, in trouble with a mast splitting in three pieces and a sail falling over the side. Figure 1 is a pen-and-ink sketch of this craft which is another of the projects of Plimoth Plantation, Incorporated, of Plymouth, Massachusetts. It is intended to represent the shallop brought over on *Mayflower* and is being constructed by Plymouth Marine Railways, Incorporated.

In creating the plans for this craft the first step, of course, was to survey the available pictorial and written material on shallops. The results of

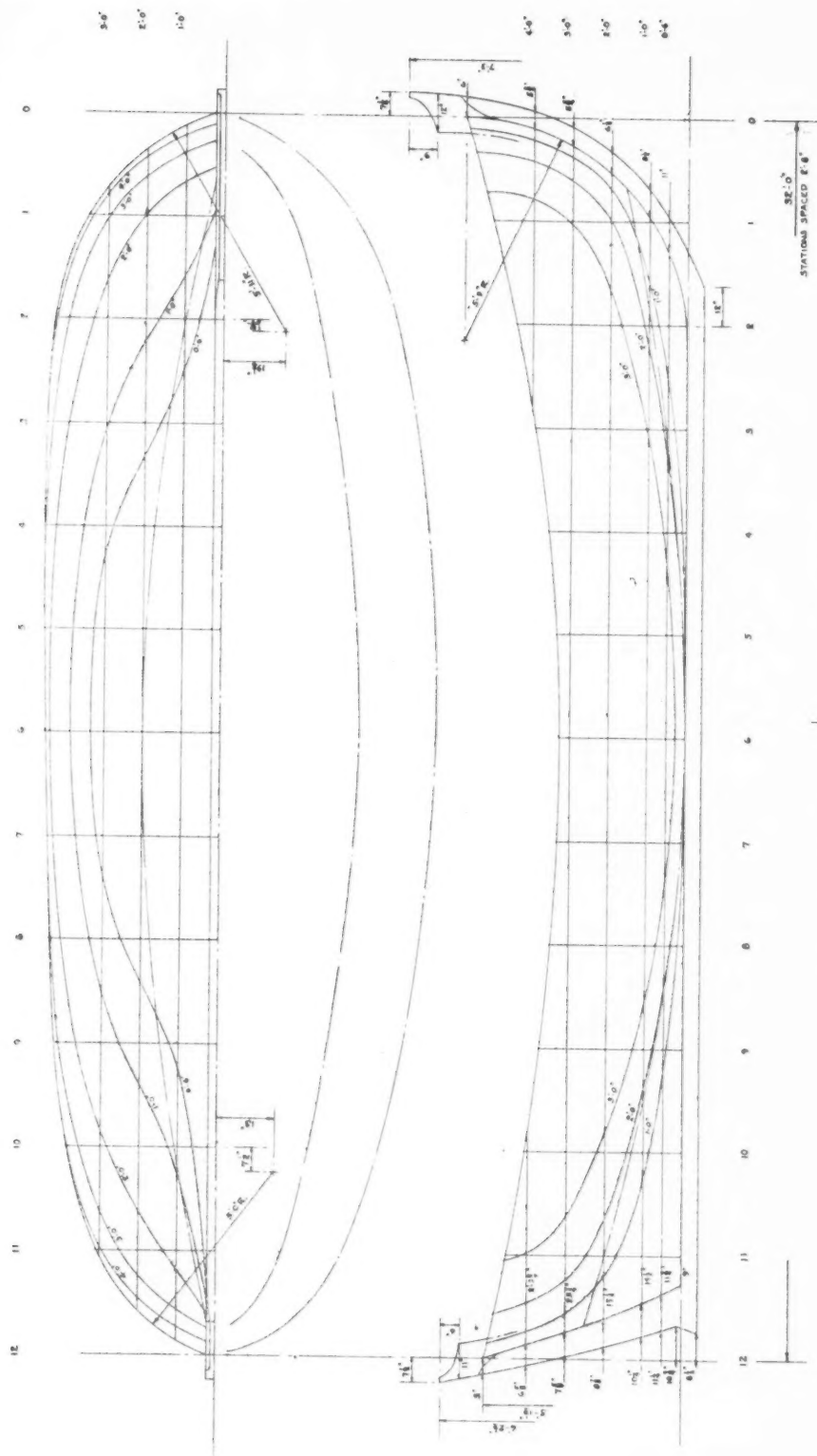


Fig. 2. Profile and water lines of *Mayflower's* shallow.

this survey have been summarized above. The bulk of the material available to me indicated the craft shown in the sketch—a heavily constructed double-ended boat having one mast with a sprit mainsail and what we normally call a jib.

Double-ended hulls of the type shown can be found in old engravings, paintings, and sketches, at least as far back as the reign of Henry VIII of England. Plans of such hulls dating from the middle of the seventeenth

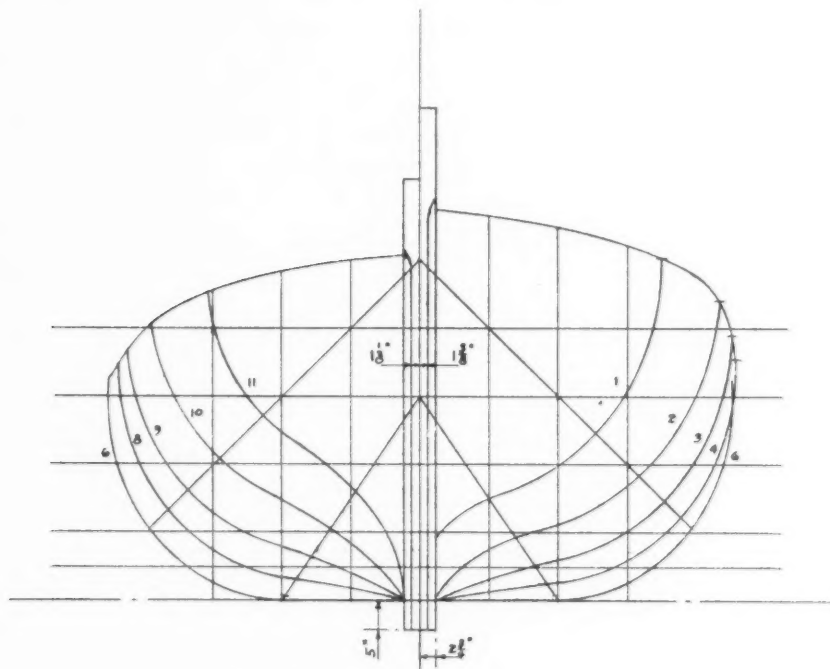


Fig. 3. Body plan of *Mayflower's* shallop.

century may be found in museums in the Netherlands in addition to the plans in books noted earlier. Small craft of the same form and construction may be found in European waters today. Construction details, therefore, offered no great problem.

The form of the hull required more working out as no complete set of lines for a small boat of the early seventeenth century have been found to date. Inasmuch as there are present-day small craft closely resembling those shown on late-seventeenth-century plans, it requires no great stretch

of the imagination to assume that similar craft could be found afloat in the early seventeenth century. Figures 2 and 3 show the lines of the shallop now building.

The rig of one mast with sprit mainsail and jib was chosen as it is the only rig consistently shown in old engravings, paintings, and sketches from many countries over a period of at least two hundred years. As it was previously noted that *Mayflower's* shallop hoisted 'sails' on one mast, two sails were required and there is no authority for such combinations as a square sail with jib or two square sails on one mast. If, as Professor Morris stated, the presence of a 'foresayle' can be taken as conclusive proof of a two-masted rig, it also can be taken as equally conclusive proof of a one-masted rig, although, perhaps, not in the particular case cited. The sail that we today call a jib in our standard 'jib-and-mainsail' sloop rig was originally and still is to the English a foresail. The sprit mainsail has a practical quality shared with the gaff type of fore-and-aft sail in that the working area may be cut in half simply by dropping the sprit and securing the peak of the sail to the tack. This leaves a snug, triangular sail and the use of a sail in such a condition may explain the earlier phrase, 'hoisted part of their sail.'

Perhaps the most difficult problem was the determination of the size of the shallop. Eighteen men, food and water, arms, and presumably some blankets comprised the load of the shallop for the exploring trip around the shores of Cape Cod. According to one interpretation of a passage in *Mourt's Relation* about thirty-two persons were aboard on an earlier occasion and there must have been sufficient room to handle the sails and oars. The dimensions as finally worked out are length overall 33 feet 3 inches, breadth 9 feet 2 inches, and depth 3 feet 3 inches.

If the 1957 shallop is not a near sister of that brought over on *Mayflower*, there were many similar craft in use in the early seventeenth century and it would have been no stranger to seafaring people. As she sails in one day by the Gurnet and beats into Plymouth harbor against the prevailing southwesterly we might sense at the helm the hand of Thomas English, master of *Mayflower's* shallop.

William A. Baker is well known to NEPTUNE readers as a frequent contributor. He is a naval architect of Bethlehem Steel Company and has drawn the plans for Mayflower which sails across the Atlantic this summer.

Industries Allied to Shipbuilding in Newburyport

BY ROBERT K. CHENEY

IN any port where shipbuilding thrived there were a number of lesser allied industries. Newburyport was no exception in this regard and I have made the following summary of these minor crafts in this town.

As the ships increased in size and there was demand for more of them, large parts of the construction were let out to subcontractors. Before 1846 the calking, painting, ironwork, and rigging were done by outside contractors, but after that date, framing, planking, decks, inside and outside joiner work were also let out. Gangs specializing in the above trades worked the different yards as their particular kind of craftsmanship was needed.

As the building yards were gradually concentrated in the north end of Newburyport, many of the allied trades made their headquarters there. The first instance of this was when the Kenistons, Jonathan and James, Jr., who also had a plant in East Boston, established their blacksmith shop on Union Place between John Currier, Jr.'s yard on the south and the Merrill yard on the north in 1811. Later the Messrs. Pettigrew set up a smith shop at the foot of Forrester Street. This firm in the sixties installed machinery to forge the anchors, chains, and other heavy work which was previously done elsewhere. Mr. George Whitmore, one of the few still living who remember the shipyards in their prime, said, 'In the Pettigrew shop the smiths would stand four in a group around the anvil and the master smith, Mark Pettigrew, a giant of a man, would strike with his hammer indicating where he wanted them to strike with their sledges. When welding was to be done and the crane had swung the white-hot pieces of metal from the forge to the anvil, Mark would use a sixteen-pound sledge and then the sparks would fly.' In addition to these two big smith shops, most of the builders had smaller forges at their yards. John Currier, Jr., kept a smith, James L. Adams, busy at his yard working up bar, rod, and small ingot iron into the smaller fittings.

In 1865 Soloman Vance owned a brass foundry at 222 Merrimac Street and on 11 March advertised that he was ready to cast spikes, bolts, rudder braces, and side lights. Brass and composite castings of any description were made to order. One year later he had sold out his foundry to Albert C. Currier and taken up the manufacture of a patent submarine pump invented by a local man. The foundry was reported doing a good business but, by the end of the decade, galvanized iron, which was much stronger than brass, would last twice as long, and was cheaper, had largely replaced brass and bronze and the machines and tools of the machine shop were offered for sale.

The plant was bought by G. W. and C. H. DeRochmont who specialized in spikes of all metals. In 1870 and 1871 they advertised as brass founders and spike manufacturers and made ship castings of all kinds.

In 1864 Alonzo and George Pearson installed a large steam mill in their machine shop across Merrimac Street at the shipyards, and were busy turning out windlasses and capstans.

Farther down Merrimac Street, near the railroad, Albert Russell of the old Newburyport foundry took over, in 1859, a rival concern, the Newburyport Foundry and Machine Shop, which belonged to James Blood. This firm, later known as Albert Russell & Sons, specialized in marine castings and invented improved windlasses and capstans, chain stoppers, bilge pumps, and iron and brass fittings, which they manufactured up until World War I. They later specialized in marine engines and also built the steam 'dummy' locomotives used on the railway which ran from Plum Island Point to the hotel.

The Colby & Lee machine shop, enlarged in 1875, did considerable marine work at Pearson's Wharf. Farther down town W. Everett Pearson had a machine shop on the inner end of Gunnison's Wharf which he bought in 1873. He built the first 'donkey,' or stationary, engine installed on a Newburyport-built ship. He also built engines and boilers for many of the steamers built on the Merrimac River.

The painting firms did not move to the shipyards. They seemed to favor the vicinity of Brown's Wharf, although Thomas H. Cutler did business just above the bridge at Merrimac Street and Bridge Row. In 1846 the oldest and most important firm of ship painters in the town was John Burrill & Co. There were many other painters, most of whom combined both house and ship painting, but space prohibits listing them in detail.

Ship chandlers, hardware merchants, sheet-metal workers, and copper-smiths seemed to like the Market Square district, the beginning of Water

Street and Elbow Alley. One good reason for this was that their merchandise came by water and there were several good wharves and warehouses handy to the vicinity.

In 1846 J. N. Wills, ship chandler and hardware merchant, had for sale 'Naval Stores as follows: 50 barrels of rozin, 50 of pitch, 25 of pine tar. Also coal tar, bright varnish, japan, spirits and turpentine.' Silas Chamberlain, a sheet-metal worker at 13 Liberty Street, was advertising 'Ships Cambosses.' 'Cambosses' were later called cabooses, another name for ships' galleys or cook houses. These were made by good carpenters or cabin joiners in various sizes at their shops and were put aboard the vessels while at the riggers' wharf. Once aboard and located they were lashed down to ringbolts in the decks. In rough weather they were frequently washed overboard and all too often the cook went with them. David T. Woodwell of the shipbuilding family had a hardware and chandlery store at 11 Market Square for years. In 1860 B. R. Knapp and Thomas Sillo-way, coppersmiths, were both located on Elbow Alley, and John Chamberlain had succeeded Silas at Market Square and Liberty Street as a tinsmith.

Other ship chandlery and hardware dealers were W. B. Boardman, Horace Wills, and Stephen Coker. Eventually Woodwell's store was taken over by Captain Thomas McKinney who was later bought out by Toppan & Wilson.

SPARMAKERS

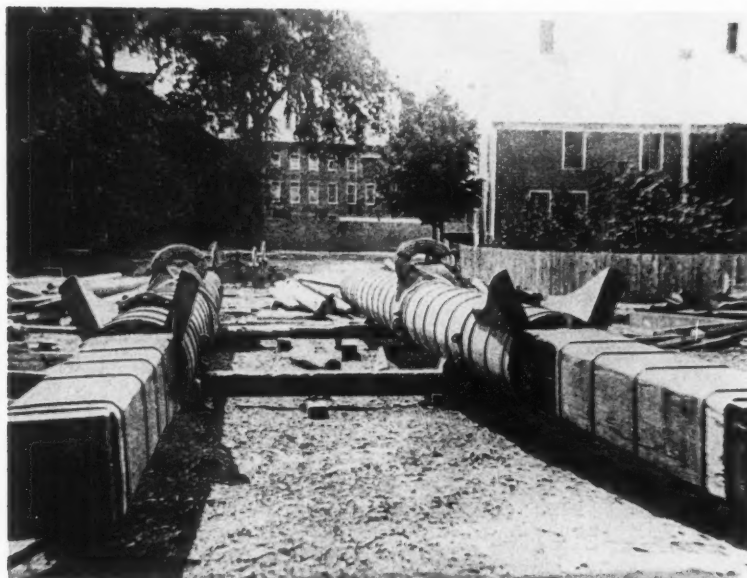
Sparmaking was a business which required a slip or dock where the spars could lie in salt water until made up, space above high-water mark big enough to set up and shape them, and a building for holding tools and machinery. The old shipyards at the foot of Independence and Center Streets were ideal for this purpose. The Independence Street yard was used by Edwin Lunt and the other by W. N. Collins. Other sparmakers included Hoyt who used the space between the upper and lower Williams' wharves before the bridge was built in 1827, Young & Trefethern who furnished the spars for the Cushing ship *Sonora* launched in 1854 but is not again mentioned, and Nathan Collins who for years made spars for many vessels.

In 1864 it was stated: 'The ship plants are prospering and are to continue so. The sparmakers and riggers are driven to death, owing to the unusual amount of shipping at the wharves below the bridge waiting for spars.' It is safe to say that from 1840 on, Edwin Lunt, the surviving partner of the firm of Titcomb & Lunt, was the busiest and turned out more



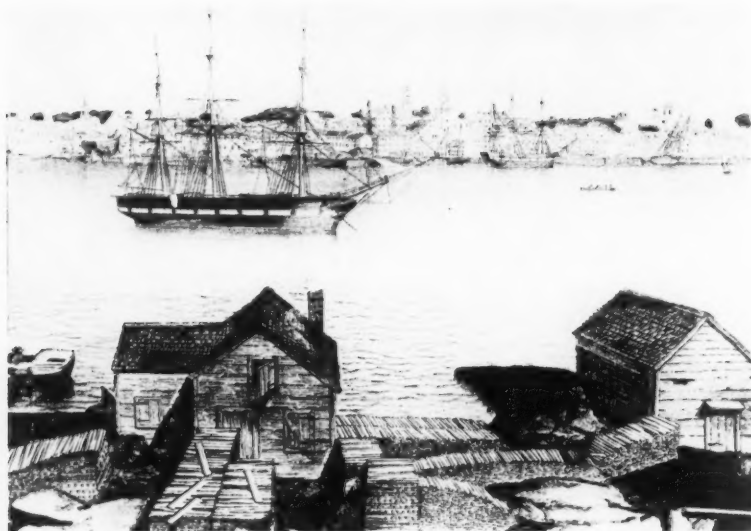
An early picture of Titcomb and Lunt spar yard. A built up mast is shown under the derrick.

Photograph from the George Noyes collection

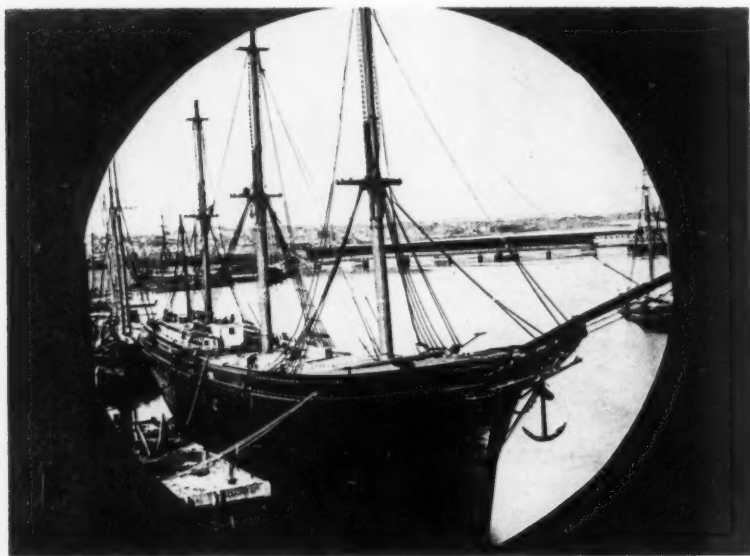


Spar yard of Titcomb and Lunt showing the fore and mainmasts for the ship *Big Bonanza*, built by John Currier, Jr. in 1875. These were the biggest masts ever made in Newburyport.

Photograph from the George Noyes collection

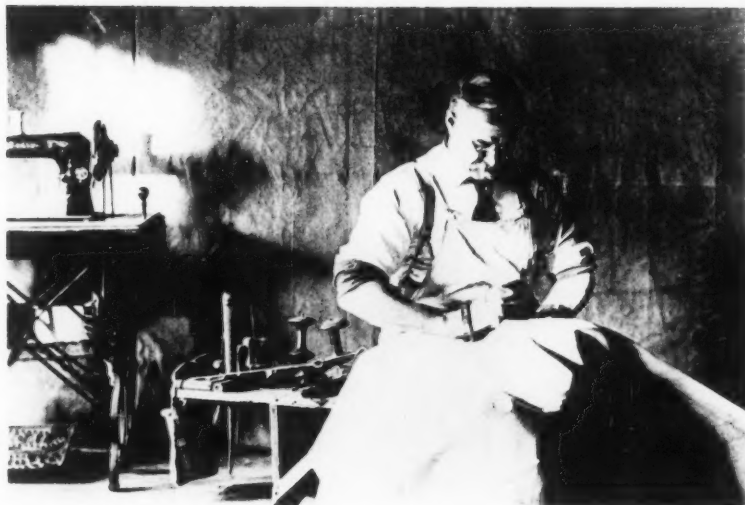


This view of Newburyport in 1846 taken from a drawing by Conant, shows a ship at Greenleaf's Wharf in the hands of the rigger Brombeck whose rigging loft was located in one of the warehouses on this wharf.



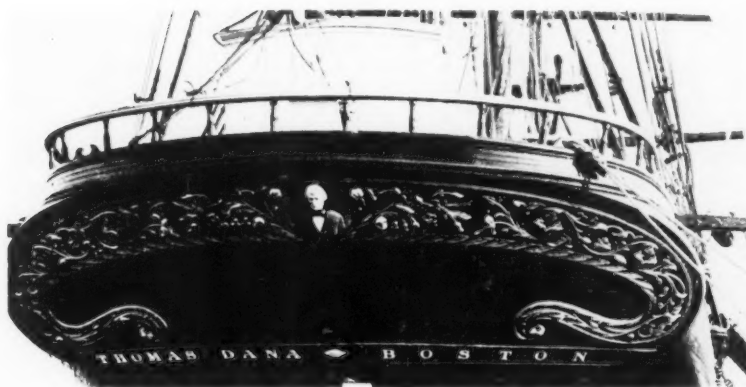
Ship *W. H. Lincoln*, second largest sailing vessel built in Newburyport, at the riggers. Mainmast shrouds have been set up as well as some of the maintopmast back stays.

Photograph from the Atkinson collection



Benjamin Davis, the last of several generations of sailmakers, at work in his loft on Ferry Wharf.

Courtesy of his daughter, Mrs. Currier

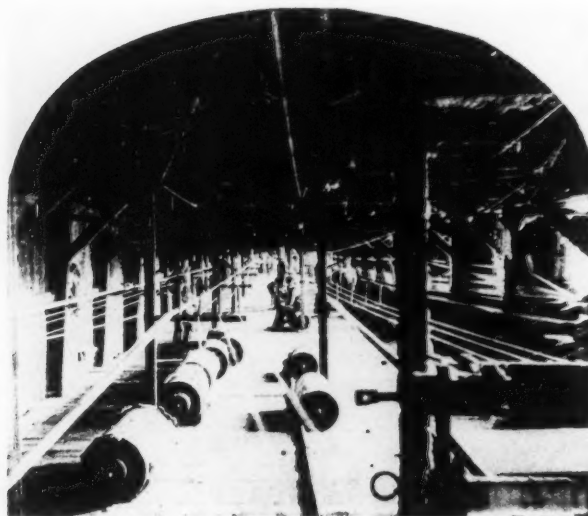


Stern carving of the ship *Thomas Dana* showing the well carved bust of man for whom the vessel was named.



The Jackman ropewalk run by Moses B. Jackman and Samuel A. Smith.

Courtesy of the Essex Institute



Interior of the Jackman ropewalk.

Courtesy of the Essex Institute

spars than any other yard. His yard was also the last to stay in business.

By 1860 many of the timbers for spars were arriving by railroad. On 24 December of that year Lunt received six spars 90 feet long and 40 inches in diameter, valued at \$300. Cut from the forests of Canada, they were towed to Buffalo where they were loaded onto flatcars and shipped by rail. They arrived in Newburyport at the Pond Street depot and were trucked from there to the mast yard.

The Newburyport *Herald* for 6 February 1863 remarked, 'Beautiful timber. Forty sticks arriving for Edwin Lunt, mast builder. Straight pine they will run 75 to 85 feet in length. They grew at the Massachusetts and Vermont border.' And on 3 August 1871, 'At the yard of Edwin Lunt the two sticks for the John Currier Jr ship have arrived from Philadelphia. They are the best pieces of timber seen here in a long time. Both are 81 feet long and 34 inches in diameter. Each stick cost \$812 rough, and will weigh 10 tons.' Most of Lunt's spar timber was brought by water, for example the schooner *Joseph Buck* arrived on 30 May 1872 with a deckload of spars for him. But when the city railroad came through he lost no time in availing himself of it, and on 22 January 1873 two spars arrived, described 'as the prettiest sticks we have ever seen. They were cut in Lunding, Canada and weigh 10 to 12 tons apiece. Freight was \$300.' In April he received six long sticks from Canada by rail, each weighing six tons.

Starting the year of 1874 Lunt had ten vessels to spar. The average ship had thirty spars, and a bark twenty-two, not counting studding sail booms and other light spars. The last of March 1875 two huge spars arrived from Canada via the Eastern Railroad for John Currier's new ship. They were cut by George E. Young, formerly of this city, and were considered the largest and handsomest sticks ever to arrive here.

On 22 July Captain Lunt completed two built-up masts for the ship *Big Bonanza*. It was said that they were the first of this type turned out anywhere, but I think it would be nearer the truth to say that they were the first ever built here. They were without doubt beautiful sticks. The mainmast was 86 feet long and the foremast 79, and both were 102 inches in circumference. In 1876 Lunt had a spar worth \$500 all finished which was hacked so badly by vandals that it was ruined.

On 8 February 1877 a splendid stick drawn by five yoke of oxen passed through the streets headed for Lunt's mast yard. It had been cut close by at Stratham Hill. On 15 May of that year two sticks came in 92 feet long and 42 inches in diameter at the center. Each weighed about 13 tons and were larger than the built-up masts of *Big Bonanza*. These sticks, priced

at \$1,200 for the pair, when finished, were delivered to John Currier's yard as the ship was to be rigged at his wharf. Some of the spars still came by water for on 1 September the tugboat *William Wooley* arrived with five spars from Boston and towed four back.

Captain William McKay did some spar work at the lower Bayley Wharf (formerly DeFord's). He produced the masts for Hardy Brothers' schooners and for the steam scow built by Cyrus Burnham at the old Jackman yard. The first day of winter 1877 he completed a large shed on Bayley's Wharf for making spars in the wintertime.

More and more spars were being made at East Boston. In 1878 the spars for the new Atkinson & Filmore vessel arrived by city railroad from the yard of George E. Young of East Boston. Young was a Newburyporter who ran a mast yard with Trefethern and who was cutting spars in Canada in 1874.

In 1882 the spars for the ship *John Currier*, named for and built by that famous builder and the largest sailing ship ever launched on the Merri-mac, arrived from Boston via the city railroad and were unloaded at Cushing's Wharf where the vessel was rigged. There were four carloads of them, the masts being 85 feet long, from the yard of Caldwell, Young & Odione.

In 1883 Edwin Lunt and William McKay were partners and together they got out the spars for *Albert T. Spears* and *Mary L. Cushing* (the last ship to be built in Massachusetts). These spars had arrived in the rough behind the tug *Farnsworth* from Boston. When the firm of Orne & Rolfe was dissolved by death, McKay bought the property at Haskell's Wharf and moved the mast business, of which he was sole owner, and his yacht building and repair work there. The old mast yard was sold to Jeremiah Cashman. By this time, with only one shipyard running and a large part of their vessels being rigged in Boston, the sparmaking trade was so quiet that those employed at it must have had other ways of increasing their incomes and McKay's yacht business, which was on the increase, served the purpose very well.

SAILS

The sailmakers, who needed an entire floor of a large building for laying out and cutting the canvas, also stayed in the center of the town where space was available, generally on the top floor or a loft of some large warehouse.

One of the port's early sail lofts was on the third story of the brick building at the street end of Commercial Wharf (now used by Swift &

Co.). It was a sail loft from the time it was built in 1822 until the latter part of 1879. A Mr. Nelson was the first sailmaker. He was followed by Thomas H. Boardman, the father of Isaac H. Boardman, one of the port's leading merchants. Blanchard & Clannin were the next occupants and since 1848 Eben P. Goodwin made sails there until he moved to the second story of the wooden building farther down the same wharf. In 1883 Mr. Goodwin stated that in the thirty-seven years he had been making sails he had made suits for two hundred and fifty square-riggers and many fore-and-aft craft but, at that time, awning making accounted for most of his business. Making sails for that number of square-riggers must have meant that much of his work was done for vessels built elsewhere.

In 1846 the following advertisements appear in the *Newburyport Herald*:

Sailmaking and etc.

The subscriber has moved to 12 Greenleaf Wharf, where he will continue to carry on the sailmaking business and, he hopes by close attention to business to receive a share of public patronage. N.B. He will also continue to pay the highest prices for all old sail cloth, junk, India rubber and old brass, iron, glass and old woolen rags.

—R. W. Yates Greenleaf's Wharf Upstairs

Cash and higher prices given for old India rubber, rags, junk and copper, brass, lead, iron and etc.

—Benj. Davis & Son. Sail loft Ferry Wharf

This concern made sails for several generations and were the last firm in the city to do this work well into the present century, still at the old Ferry Wharf loft.

Sailmakers in the *Newburyport Directory* for 1852 are listed as follows: Charles Currier, Cushing's Wharf; Clannin & Goodwin, Coombs' Wharf; Eben P. Goodwin, Commercial Wharf; Andrew Haynes, Brown's Wharf; George W. Hale, 10 City Wharf; and Benj. Davis & Son still at 4 Ferry Wharf.

In 1860 Clannin & Goodwin were at Coombs' Wharf and according to the records made sails until 1868 or later. Charles Currier still had a loft in one of Cushing's warehouses until his sudden death on 15 May 1868. Benj. Davis & Son, Andrew Haynes, and George W. Hale were at the same location.

On 30 September 1864 Davis & Son were very busy and had made up 71,000 yards of canvas into sails during the year.

In 1871 Charles O. Currier had taken over the loft left vacant by the

death of Charles Currier in 1868. E. P. Goodwin was still located on Commercial Wharf and the Davis firm was still doing business at Ferry Wharf.

In 1883 Eben Goodwin was still in business at Commercial Wharf but most of his work was on awnings. In the same year John Currier, Jr., launched his last ship and there was only one shipyard in the city doing business and one firm could handle all the sailmaking for that yard and take care of the yachting trade which was on the increase.

In 1890 Benj. Davis, the only sailmaker left, stated that business was better than for years. Whether he had the contract for some of George E. Currier's vessels or yacht sails or awnings was not mentioned.

During the fall of this year, George W. Hale, formerly a sailmaker at City Wharf and located in Taunton, paid his native city a visit. From this time on Davis did much work for yachtsmen. In 1905 or 1906 the big yawl *Oweene* came here to have some alterations made in the sails that he had furnished her. About 1920 Sidney Drown bought Davis out and did what awning business there was, made a few yacht sails and did any other canvas work there was until his death a few years later.

Although there were five cotton mills here no canvas or duck was made by any of them. The sailmakers purchased their canvas in Exeter, New Bedford, and, in one instance, from Montreal for a ship built here for English interests.

PUMP AND BLOCKMAKERS

In 1852 the following were plying the pump and blockmakers trade: Nathaniel Currier, 25 Water Street; Elias Pike, 12 Fair Street; George and William Pike at the same address; James A. Post, 67 Water Street; Caleb Stickney, 69 Water Street; Henry Stockman & Sons, City Wharf; Moses Stockman, Brown's Wharf; and Elias Todd, Johnson's Wharf.

By 1860 the city directory tells us that Currier had moved to 16 Beck Street, while Elias Pike, Caleb Stickney, and Henry Stockman & Sons are at their old addresses, and M. Todd has replaced Elias Todd at Johnson's Wharf.

In 1869 Caleb Stickney advertised: 'Blocks made by steam power. All kinds of ship blocks constantly on hand or made to order on short notice. Orders from abroad promptly attended to.' At this time George A. Pike had taken the place of Elias Pike at 12 Fair Street, Henry Stockman & Sons were still at City Wharf, and instead of M. Todd it was Todd & Brown.

In 1880 Caleb Stickney and Todd & Brown were the only ones listed and most of their time was spent in making water pumps for the streets

of the city. Some of these pumps were works of art. Made from long logs, they were first bored with long, double-handed augers. A box or valve was put in at the bottom and the best of them had a brass sleeve pushed into the hole at the upper end where the plunger worked up and down. The outside was finished sometimes six and sometimes eight sided and the extra fancy ones were turned like a ship's bannister where they showed above the ground and the spout and handle were also turned. The one that stood on Market Street where the Moose Hall is now located was very elaborate and no one was even contaminated by drinking from the metal dipper which was attached to it by a chain.

On 9 June 1882 Caleb Stickney passed away and George W. Stickney took over the business and made the blocks for the ship *John Currier* which should have kept him out of mischief for a while. In 1888 William Woods, a fuel dealer, purchased the old Stickney pump and block mill and turned it into stores.

In the spring of 1889 George A. Pike, the last of this family to work at the trade at the old location on Fair and Pile Streets, closed out his business. Ship pumps were now being made of iron and many new machine-made pumps were taking the place of the old hand-bored ones.

CARVERS

Elaborate figure- and billethead which ran the gamut between a simple scroll on the billethead and trail boards to a life-sized figure of a man or woman decorated the bows of most vessels. Currier & Townsend's famous *Dreadnought* had a beautifully carved dragon which took \$25 worth of gold leaf to gild. Another Newburyport-built vessel, the bark *Waitemetra*, had a full-length maiden carved by Woodbury Gerrish of Portsmouth in 1864. Only a few of these marvels of the carver's art remain today.

The first carver in Newburyport that much is known about was James Wilson whose place of business was at 8 Strong Street. In addition to doing most of the ship carving in his time he carved the yard full of statues set up by the eccentric 'Lord Timothy Dexter.' On his death, 27 March 1857, his sons Joseph W. and A. Wilson took over the business which he had conducted since 1798.

Others plying the trade at this time were Andrew Brown at 258 Merrimac Street and H. H. Adams at 103 and 105 Merrimac Street. As shipbuilding ceased the Wilsons did other types of carving. A large eagle for \$25, a smaller one, and a miter were made for St. Paul's church. In 1883 they were carving for the Portsmouth builders. Later they carved bannis-

ters for stairways, ornamentation for door and window heads (an example of which can still be seen on the house occupied by them on Strong Street), match boxes, comb cases, and many other articles, and by so doing kept the business running. In 1889 they carved the signs for Lowell & Choate, Balch's Cafe, and the Order of the United American Mechanics. They gave up the business in 1900 and both had died by 1903.

RIGGERS

The city directory for 1852 lists the following riggers: Tallock Brombeck, 7 Ferry Wharf; Robert Piper, Brown's Wharf; W. T. Work, 46 Temple Street; George Wellington, Johnson's Wharf; J. B. Pritchard, 9 Prospect Street, and William T. Pritchard at Johnson's Wharf. Three years later Brombeck and Piper were using the same location and the Pritchards had formed the firm of William Pritchard and Co. with locations at Johnson's and Brown's Wharves. In 1860 the only firms listed were Brombeck at Ferry Wharf and the Pritchards at Brown's Wharf. These two companies continued to have the business to themselves from 1869 to 1873 when a Boston firm rigged the schooner *W. S. Jordan* at Cushing's Wharf.

Wire rigging was commencing to be used and was proving to be better than the Russian hemp used for many years. In 1876 three ships on the stocks at John Currier's, George E. Currier's, and Atkinson & Filmore's yards were to have wire rigging throughout. John Currier's vessel would have English and the other two American wire.

During a slack spell the Pritchards were doing the rigging at the Pleasant Street church repairing the steeple. The next year Charles Pritchard of the firm left for Baltimore to take charge of a rigging gang there. It was said at the time that he represented three generations of riggers who had worked here for over one hundred years.

In 1880 Brombeck had moved to Brown's Wharf. Not much is known about him but he rigged vessels as they came from the builder's hands for over forty years. Conant's drawing (Plate 10) shows a vessel being rigged at Greenleaf's Wharf where he was located in 1846. Being a Scandinavian, anything about sailing ships was second nature to him.

The Pritchards had a world-wide reputation and vessels rigged by them were never reported in trouble from slack or parted rigging. In the spring of 1950 their building was torn down and the windlasses used by them to stretch the rigging came to light. Judging from the strength and purchase of these windlasses there could not have been much stretch left in rigging once they were through with it. Energetic and of nervous

temperament they drove their men and did a bit of criticizing when they thought it was necessary. While *Daniel I. Tenney* was being rigged, one of the gang in the crosstrees was not working as fast as they thought he should and he was told by one of the partners that he could do better even if he had only his legs to work with.

When the mast yards went out of business many of the schooners built by George E. Currier were rigged in Boston but there was more or less work on flagpoles, moving and hoisting heavy machinery and other shore rigging as well as the jobs at the shipyards.

On 8 May 1888, the Pritchards put in the flagpole for the Marine Society, and on 6 September of the following year they hoisted the bowsprit of one of Currier's schooners into place. They did all the yard hoisting and rigging which included placing the tanks, boilers, and machinery and other work which kept the firm fairly busy as long as the yard was in business. When W. S. Currier built in 1889 to 1891, Francis Low & Co. of Boston rigged his vessels.

ROPEWALKS

Shipbuilding would not have been very successful without rope, and many ropewalks were established very early in the town's existence.

In 1846 the schooner *Florence* brought, in her cargo, fifteen bales of manila from E. Winslow for Pettingill and Dounels and eleven bales of hemp for the same consignees.

In 1852, Michael and Enoch Wormstead were still in business, having rebuilt their plant after a disastrous boiler explosion in 1843 had wrecked it. The Pearsons were still manufacturing rope and cord—Ariel was listed as a ropemaker and George as a cordmaker. Paul G. Lunt and Moses Jackman were also in this business.

Heavy ropemaking, such as hemp standing rigging, heavy anchor cable and towing hawsers, was being taken over by ropewalks in other cities and our plants were concentrating on lighter lines and cords.

John N. Cushing, Sr., did not help this industry much. He bought all the rigging for his large fleet of brigs in Russia, had it made up ready for use there, and each of his vessels had a complete set of standing rigging aboard for an emergency.

The city directory for 1860 lists 'cordage and linemakers' instead of ropewalkers. In this list is S. Davis & Co., 45 Marlboro Street; Paul G. Lunt, 17 Bromfield Street; and Ariel Pearson, 40 Bromfield Street. S. Smith & Co. (associated with Moses Jackman) was at 41 Marlboro Street and Michael Wormstead had his walk at Chestnut Street.

Under date of 2 February 1865, the following article appeared in the *Herald*:

We miss the old ropewalkers that used to run from Bromfield Street to Marlboro, with one, Smith's, below. The one hundred men and boys who served an apprenticeship in these ropewalks are plying their trade in all parts of the country and the ropemakers were sent as far as India and to superintend the Imperial ropewalks in Russia. No manufacturing of ship rigging in town now. All that is left is white rope (clothes line made from cotton), bed cords, fish lines and small stuff. Thirty or forty years ago Wormstead & Pearson's small stuff was sold all over the country by tin peddlers. Ariel Pearson, son of the Pearsons of the old firm, is still in business as is Moses Jackman, successor to Samuel Smith & Co., but the principal manufacturer now is Paul G. Lunt. Thirty years or more ago upwards of 25 or 30 were employed in his walk and the business ran about \$40,000 annually.

Five years later, 25 December 1869, another article: 'Newburyport Cordage manufacture has long since ceased. But the rope makers from our former ropewalkers are scattered over the country, among them are the Pearson Brothers and company of Boston who turn out four tons of rope a day.'

In spite of these Jeremiah views, in 1875 Paul Lunt moved his ropewalk a few feet from its location on Bromfield Street and added 200 feet, giving it a length of 500 feet. On 5 October of that year a new, two-story building 25 by 13 feet was built by Calvin Currier for an addition to the cordage plant of Moses Jackman at Marlboro Street for a counting room and storeroom. In 1876 the term ropewalkers seemed to be discarded and they were called line factories. On 13 January the *Herald* stated: 'Line factories at the south end of our city are busy. M. B. Jackman and Paul G. Lunt are now very busy, they make fish line for the world and do an annual business of \$100,000 and employ 40 hands.' A year later Moses Jackman added 16 feet to his tar house, making it 40 feet long. 'His business is increasing.'

Colby & Lunt, who closed their shipyard with the launching of *Jennie Seavers*, took over the Paul Lunt ropewalk or line factory purchased by one of the firm, Enoch P. Lunt, for \$600, when 'Paul G.' set sail for his last harbor in 1878. They brought it up to date and started the tar house on 3 May. In 1884 Moses Jackman planned to move his business to Gloucester and on 24 July of that year he closed his plant for lack of business. On 1 April 1886 Eben Knight bought the old Paul Lunt ropewalk from Enoch P. Lunt and eighteen months later sold a section to R. S. Tibbetts. The remainder was torn down by L. F. Currier. Tibbetts' section, 80 feet long, was to be made into a store and the section torn down was 350 feet in length.

SHIP'S BOATS

Another very necessary accessory were the ship's boats, which ranged from a longboat (sometimes 50 feet in length and built strong and heavy enough to ferry merchandise to and from the shore at places where the water was shallow or where there was no wharf or pier where the ship could tie up) to the captain's gig, all paint, varnish, and polished brass. In addition to being sturdy they had to be built on a very seaworthy model, as at any time they were apt to be called upon to take aboard the ship's crew and passengers together with food and water, and stay afloat, although deeply loaded, in a seaway for days on end.

Pickett & Ladd located at Water and Fair Streets were the principal ships' boatbuilders in 1846. Later Orne & Rolfe did most of the building. Originally located on Bayley's Wharf, they purchased Haskell's Wharf later and in addition to ships' boats, built and repaired yachts and small steamers. Both partners in this firm died in 1881: Rolfe on 21 March and Orne on 7 December.

In 1874 W. H. Morse was building ships' boats at the foot of Tyng Street at the rear of 222 Merrimac Street. When shipbuilding was discontinued he built skiffs and dories. John Townsend was also a ships'-boats builder. Captain Charles Currier built yawls and jolly boats in the old cooper shop (later used by the Hunt Brothers in their fish business) on Rines' Island after he had given up fishing. In 1880 Charles Bartlett had a boat shop on South Pond Street and was listed as a builder of ships' boats. No other reference is made of the ships for which he built the boats. This work was so different from ordinary small-boat building that most boatbuilders did not bother with them. After the death of Rolfe, suddenly, after a day's work at the shop, the business was suspended and most of the ships' boats were built elsewhere. On 10 October 1881 the four boats for Atkinson & Filmore's vessel arrived on the city railroad and were said to be fine-looking craft. A year later five boats arrived for the ship *John Currier* via the same line.

CHRONOMETERS

In navigating a vessel from port to port, once clear of soundings, it is necessary to have the exact time to determine just where on the earth's surface the vessel is. Captain Joshua Slocomb sailed the sloop *Spray* around the world with an alarm clock and a nautical almanac, and the alarm clock was just as reliable as any other alarm clock fifty years ago. But it must be remembered that he had years of experience as a master mariner to draw from to augment the little help given him by said clock.

Chronometers, which were and are a very accurate form of clock, were

universally used for offshore work and in 1860 there were two firms which made a specialty of selling and taking care of them. Both John Bliss & Co. and N. C. Greenock were located at 11 Broadway (Merrimac Street).

FURNISHINGS

As the passenger trade was catered to, the ship's furniture and furnishings became important. In the sixties, Ireland & Trefethern, who were called furniture dealers at the time but would come under the head of interior decorators today, furnished most of the curtains and draperies as well as the furniture. In 1865, however, T. H. & A. W. Lord, upholsterers, attended to the curtains, etc., and did the increasing amount of upholstering needed for the cabins, ladies' and gentlemen's saloons, and lounges, while Ireland & Trefethern still supplied most of the furniture.

In this field N. W. Hurd was bidding for a share of the business and did the furnishing of the bark *Hayden Brown*. S. B. Noyes was also in this line of work and Eben Rolfe, a cabinetmaker, was kept busy building the settees which were fastened to the bulkheads and the tables which were fastened to the floor. Most of the carpeting was from the shop of E. S. Sweetser. The elaborate cabins of *Mary L. Cushing* were finished in red plush and contained an upright piano.

COOPERING

This was another trade necessary to complete the ship. 'Scuttle Butts' (casks for water), harness casks to keep the salt beef ('salt horse' as it was called), and later square tanks to contain water for the passengers and made to fit in odd corners, draw buckets and water kegs for ships' boats, which were kept provisioned in case of disaster; all these had to be made.

Thomas Goodwin on Stanwood's Wharf and W. S. Coffin, who fitted his cooperage business in with his duties as a coal dealer on Johnson's Wharf, both specialized in this kind of work. George Fitts, whose wharf was between Brown's and Horton's Wharves, did coopering for shipbuilders on Horton's Wharf.

Medicine chests were also a must and were furnished by the local druggists. S. A. McConnell supplied the chest for the bark *Hayden Brown*, and A. J. Atkinson those for the ships *John Currier* and *Mary L. Cushing*.

OTHER WOODSMEN

In addition to the carpenter gangs sent out by the builders to find and fall suitable trees out of which sections for the frames and other ships' timber could be cut, many woodsmen not affiliated with any shipyard

worked in the upper stretches of the Merrimac and its tributaries, getting out timber which gangs of log drivers took down the river to the mills on the spring flood. There it was sawed into dimension timber, rafted and floated through the locks put in the dams for that purpose to the lower river. The raft finally arrived at the shipyards where it was tied up to the eye- and ringbolts driven into the shore ledges to await use.

Timber for the Coffin yards at the foot of Jefferson Street and below was kept in the cove above the yards, and the eyebolts, set in lead at the old Billy Bowen yacht yard which formed the northern boundary of the cove, can still be seen.

Mr. Isaac Webster showed me similar bolts used for the same purpose between the old John Currier yard and that on the north used by the Merrills and others.

The last timber to come by this route was hauled through the canal at Lawrence in a long raft and arrived at Newburyport on 24 November 1882. Trees felled for spars were driven direct from the woods to the ship or mast yard where they were tied up afloat until they were fashioned into mast yards and other spars.

Robert K. Cheney is a native of Newburyport who has been collecting material on the maritime history of his native city for many years. This article is based on one aspect of his research.



The Mayflower's Jones

BY GERSHOM BRADFORD

WITH the coming of the new *Mayflower*, bringing the good will of the British people, it would seem to be an appropriate time to assist in rectifying an injustice in which the master of the Pilgrims' ship was the victim. Down through the centuries Captain Jones has been regrettably saddled with a tarnished reputation. Even in recent years he has been pictured to all America as betraying the Pilgrims for a reward. In one standard work the otherwise careful and thorough researcher fell into the error of accusing Jones of knavery and fraudulent dealings, becoming so convinced of his perfidy that he lost no opportunity to cast a slur in his direction.

It is singular that the serious charges against the captain were made after the on-the-spot historians, Bradford and Winslow, had passed away; they, amid several pleasant references, recorded only two minor complaints. It is believed that by a close study, with a seaman's eye, of the fragmentary references to Captain Jones in the original accounts and fitting them into the conditions prevailing at the time, his good character can be restored.

It is well known that *Mayflower* was chartered in London and that Captain Jones went along with her. It is doubtful if he had ever made a voyage to America, but John Clark was hired as pilot, serving as mate, he having made voyages to Virginia, one only a year before. Robert Coppin, a master's mate, had once previously been on the coast of Massachusetts.

The season was late when *Mayflower* finally sailed—16 September, N.S. The prevailing winds on the route to the Hudson River have been the bane of westbound mariners since the first ship attempted it, and in the fall they take on vigor and persistence. The gales are frequent and boisterous. Joseph Conrad wrote a great essay bearing on these winds, which he called the 'King of the West.' A reading of his remarks on North

Atlantic weather will give a good idea of the work that Jones had cut out for him. Yet he succeeded admirably.

A crisis occurred in mid-Atlantic where, after encountering many storms, the ship began to yield dangerously to the stresses of heavy seas. The main beam amidships gave way and caused the upper works to leak badly as the seams opened, releasing the caulking. In this alarming situation the leading passengers called an emergency consultation with the master and his officers. The Pilgrims then let it be known that they had rather return than face inevitable disaster.

The master with a little less determination in his character could have borne away before the prevailing westerlies for England, the ship riding more easily and safer. On the other hand he could face the hazard and buck his way against wind and sea towards his chartered objective. At this critical juncture Captain Jones decided the future trend of New England history by keeping resolutely to the west.

It was agreed that the ship was still sound below the waterline and the 'master and carpenter affirmed' that with certain expedients applied they would proceed. A large iron jack, providentially brought from Holland, was blocked up under the beam and it was forced back, more or less, in place. A stanchion was set firmly beneath it for support. The seams were caulked as best they could. More gales were met in which not a stitch of canvas could be spread for days on end, and they were hove to, under bare poles. Whenever the weather moderated Jones worked her westward under easy sail to relieve the stresses and strains, until on the nineteenth of November, N.S., he made the famous landfall at Cape Cod. Yes, the Pilgrims, amid all their tribulations, were fortunate in being in the care of seamanly Captain Jones.

Let us investigate the earliest charge made in 1669 by Nathaniel Morton in the New England Memorial; it is one of bribery. Jones is accused of having taken a reward from the Dutch for which he was to divert the ship from the vicinity of the Hudson River, then Northern Virginia, to which place they were bound, the inference being to avoid competition for furs at their trading post on Manhattan. This appears logical at first sight. But were it the case, why did the New Netherland Company, the organization most affected, petition the Prince of Orange on 12 February 1620 to allow and encourage the Pilgrims to emigrate to Manhattan? These people were then 'well inclined to proceed thither to live.' It is not believed that Morton knew of this document. The Pilgrims' negotiations with the Dutch for this purpose were broken off when Thomas Weston of London appeared in Leyden with a more desirable proposi-

tion. They preferred to be under the British flag. One of their reasons for leaving Holland was to preserve their English heritage for their children.

Furthermore, in refutation of the bribery charge, when *Mayflower* at last sighted Cape Cod there was a conference. 'After some deliberation among themselves and the master of the ship' (emphasis added), they stood southward for the Hudson River. From that statement made by William Bradford, no doubt participating in the conference, it surely does not appear that Jones was bent upon diverting them from their objective. When later that day the ship was caught in the breakers of Pollock Rip Shoals, it was 'they,' not Jones alone, who resolved to bear up for Cape Cod again and they 'thought themselves happy to get clear of those dangers.' Jones made no recorded remonstrance at setting the ship's course towards the Hudson River; the Pilgrims willingly headed up for Cape Cod Harbor. The bribery charge is not supported.

One further loses credence in Morton's charge when he wrote that Jones 'under pretence of the shoals,' disappointed them in going to the Hudson River. There is no shipmaster who has navigated those waters that would not scoff at that remark. Once among those breaking shoals Jones was both skillful and lucky to get clear—there was no pretence on his part. Moreover, Morton's statement that the ship was forced into Cape Cod Harbor 'partly by reason of a storm,' is only true to the extent of their experience on the Shoals and even then there was no storm, the breakers being due to swell.

It is and always has been the duty of a shipmaster to employ his vessel to the best advantage of his owners. *Mayflower* was chartered to take the Pilgrims to the New World as quickly as reasonably possible and return. Pursuant to his duty on arrival at Cape Cod Harbor, Jones persistently pressed the company to find a place of settlement and get out of the ship. This pressure caused William Bradford, shocked by the desolation of the coast, to record a criticism of Jones, referring not too severely to the 'importunities of the master.'

The captain can well be criticized for his failure to curb the members of the crew who used abusive language to the Pilgrims and had too much to say in other matters. After all, passengers by the law of the sea always have had a right to the protection of the crew, 'to the last plank of the ship,' as the old saying goes. Moreover, they were an unobtrusive people and did not deserve it.

Turning now to the records of Bradford and Winslow let us note the helpful acts that Captain Jones performed: the shallop, the Pilgrims' own boat, was damaged by heavy seas on the passage over, hence was some

time under repair which hindered the efforts to explore the coast. When this boat was ready Jones offered to go along and lend a hand. They put him in charge that they might 'gratify his kindness and forwardness.' He does not appear here to be playing the part of a knave, nor does it appear that they thought of him as such.

When, subsequently, a suitable place for settlement was found and the ship safely anchored in Plymouth Harbor, Jones assisted by taking charge of the shallop when the shore of the bay was examined for the best location. By inference he was so employed when the river which bears his name was discovered. It is an unimpressive stream but down through the years hundreds of vessels have been launched into its waters, lifting it to an importance far beyond its size and giving the captain a nice little memorial in the New World. Alexander Young, an eminent Pilgrim historian, suggested (1841) the probability that the colonists so named the stream and 'would not have so complimented him had they entertained any doubt of his fidelity.'

On 8 January 1621, despite the ruggedness of the season, 'Master Jones sent the shallop, as he formerly had done, to see what fish could be got. They had a great storm at sea and were in some danger. At night, they returned with three great seals and an excellent good cod; which did assure us that we should have plenty of fish shortly.'

In that age beer was a household beverage with no unfavorable reflection on those who used it. The supply in *Mayflower* was running low so Captain Jones forced the Pilgrims to drinking water and Bradford, sick ashore, complained with some bitterness that he was denied a little beer. Yet he does not direct his criticism at Jones alone, but 'they' he wrote, refused him. Again, seemingly, the mates and sailors were having too much to say. However, at Christmas, to those still in the ship, the captain issued beer, as well as on several other occasions. In the height of the sickness ashore the distressing conditions struck his sympathy and he sent word to the governor that he would send beer ashore to the sick that were in need of it 'though he would drink water homeward bound.' The modern equivalent would be a passage without coffee.

On 9 February the captain went on a hunting trip ashore during which he shot five geese, 'which he friendly distributed among the sick people.' He really does not appear to have been a bad fellow.

The Pilgrims brought with them in the ship two pieces of ordnance, one a minion weighing 1,200 pounds, the other a sakeret of 1,500 pounds. Captain Jones after landing them on the shore, with some of his sailors, helped the settlers haul them up the long hill and mount them on their

fort. This was a considerable task, but sailors with tackles can do much. A shipmaster is only expected to land cargo on a wharf or the shore. There could hardly have been a clause in the charter requiring more, for it was not known upon leaving England that there was going to be a hill. It was helpful assistance willingly offered and gratefully acknowledged. The day of this coöperative service saw another act of kindness—the captain brought with him ‘a very fat goose to eat with us . . . and so we were kindly and friendly together.’ One respected writer who had called Jones a villain, appears perplexed by this cordiality, remarking that the colonists seemed to stand ‘in some awe’ of the captain. It seems rather absurd to think that Governor Carver, a man of parts; that Brewster, with his years at the court of Elizabeth; that Standish, able to kill a powerful Indian pinese in a hand-to-hand battle; nor Winslow, capable of meeting more difficult situations—yes, unreasonable to think that such men—should stand in awe of Captain Jones.

The question no doubt will arise as to the reason for the disparaging passages in otherwise solid books. The answer is as simple as it is inexplicable. It lies in a curious case of mistaken identity. In all references to the master of *Mayflower* in early Pilgrim accounts he was given no Christian name. Someone up the line of history jumped to the conclusion that he and a notorious Captain Thomas Jones were one and the same man, this error being accepted by some later writers. However, Dr. Henry M. Dexter, a careful student of Pilgrim history doubted in 1865 that the *Mayflower* Jones was Thomas.

A ship called *Discovery* was commanded by this Thomas and was involved in some unsavory adventures. In 1622 this vessel anchored in Plymouth Harbor and William Bradford records the event in these words: ‘Behold, now another providence of God; a ship comes into the harbor, one Captain Jones being chief therein.’ Here it is obvious that he is speaking of a stranger. How could he so unemotionally express himself if the man had been he with whom they had shared a close association for over seven adventurous months! No, it appears clear by this remark alone that Jones of *Discovery* was not Jones of *Mayflower*, with whom Bradford had so recently sat down and ate ‘kindly and friendly together.’ Yet, singular as it may appear, Jones of *Mayflower* has too often been accepted as Thomas and his memory clouded with the onus of the other’s evil reputation.

Happily, in comparatively recent years, the confusion between these men has been cleared. *Mayflower*’s Jones has emerged as Captain Christopher Jones, a man of substance (as was his father before him), a part

owner in the historic vessel and about fifty years of age. A paper dated 1624 has come to light, being an appraisal of *Mayflower* made for the benefit of her owners, one of whom was the relict of Christopher Jones. One is led to believe that by the early death of the master and the deteriorated value of the vessel that they both were sacrifices to the famous voyage.

A more recent and further establishment of the captain's identity is the will of Priscilla's father, William Mullins, discovered in England, a photostat of which now hangs in Pilgrim Hall in Plymouth. This was a nuncupative will dictated immediately before his death. It was evidently sent to England in *Mayflower*, as he had left children there by a former marriage who were beneficiaries. The witnesses were Governor John Carver, Giles Heale and Christopher Jones—there is his signature.

From all evidence now available Captain Jones was an excellent and resolute seaman, a man of some means and background and while firm in his duty to his ship had a definite touch of kindness in his nature—and this in an age of hard dealings. As a navigator with crude instruments, much stormy and overcast weather, he did very well in being no farther in latitude from his destination than Cape Cod, aspersions to the contrary notwithstanding. Longitude in those days was a mere matter of guess, there being no practiced method of obtaining it. While there had been many other navigators who had crossed to that coast before him, Jones is conspicuous by having made it in the fall and early winter.

Judging from what the Pilgrims themselves put in the record, Christopher Jones was worthy of the prominent part he took in establishing the first permanent settlement in New England.

Gershom Bradford is a frequent contributor to NEPTUNE and needs little introduction to our readers. He is retired from the Hydrographic Office of the Navy Department and lives in Washington, D. C., but makes his summer home in his native town of Duxbury, Massachusetts.

American Steam Navigation in China 1845-1878

PART IV

BY EDWARD KENNETH HAVILAND

VI. OLYPHANT AND CO.

Next in importance of the American firms in the China trade in the 1860's and 1870's was Olyphant and Co., which was founded by D. W. C. Olyphant in 1828, and lasted until 1878.⁴⁰⁸ They actively supported American missionary efforts and refused to engage in the opium trade, but in spite (or perhaps because) of this were not overly popular with their contemporaries. Augustine Heard and Co., it will be remembered, had failed in 1875 and after the sale of the Shanghai S. N. Co., Russell and Co.'s activities contracted to such an extent that Olyphant and Co. came to be regarded by some as the leading American house in China.⁴⁰⁹

Olyphant and Co. were early in the Yangtze trade and for several years this seems to have been their principal, if not their only, steam shipping enterprise, their fleet consisting of *Poyang*, *Takiang* and *Kiukiang*. *Poyang* was a wooden side-wheel steamer with a registered tonnage of 828, built for the company in 1861 by Roosevelt and Joyce. In her first register, dated 15 October 1861, she is listed as owned in 1/48 shares by eleven different persons, including L. N. Hitchcock, Robert W. Olyphant, William W. Parkin, Anthony B. Neilson and David C. Vail, who were partners in Olyphant and Co., and her captain, George Briggs. Under the latter, she left New York on 26 October 1861 with sixteen passengers, one of whom, Mrs. H. Dwight Williams, has left an account of the voyage.⁴¹⁰

⁴⁰⁸ See E. Griffin, op. cit., p. 202. A writer in *NCH*, 23 January 1873, pointed out that, strictly speaking, the Olyphant and Co. of that time was the third firm of that name.

⁴⁰⁹ Testimony of Captain Thomas Francis Burr, *HMD* 31, I, 226. G. Wiley Wells, who was in charge of the American consulate at Shanghai from 13 September 1877 to 10 January 1878, stated, however, that Russell and Co. was then the principal house at Shanghai (and, by implication, in China). *Ibid.*, p. 481.

⁴¹⁰ Mrs. H. Dwight Williams, *A Year in China* (New York, 1864).

Proceeding via the Cape of Good Hope, *Poyang* arrived at Hong Kong on 23 January 1862, having made the quickest voyage up to that time, namely 86 days, of which 17 were spent in port coaling. A typical American sound steamer of the period, she was built for Olyphant and Co.'s Yanztze service and remained in it until sold to Russell and Co. near the end of 1865, as mentioned earlier.

Second of the steamers to come out from the United States for Olyphant and Co. was the wooden propeller *Takiang* of 609 tons, built in 1862, also by Roosevelt and Joyce. In her first register, dated 19 April 1862, she has eight owners, all presumably and most evidently connected with Olyphant and Co. She left New York under Captain Sanford on 6 May 1862, arriving at Shanghai on 6 August,⁴¹¹ and appears mostly to have traded on the Yangtze, although she is mentioned at times as on the Ningpo line and as sailing between Shanghai and Hong Kong. In the latter part of 1864, she was sold at Kanagawa to a native Japanese prince for \$90,000.⁴¹² Later she was known as *Peiho* (see below under Joseph M. Batchelder).

Last of the steamers built for Olyphant and Co. in America was *Kiukiang*, a wooden paddle steamer similar to *Poyang* but larger, being of 1,065 tons register. She was constructed by John Englis and Son and in her first register, dated 27 January 1864, is owned in fortieth shares by no less than twenty-one different owners, most of them partners in or connections of Olyphant and Co.⁴¹³ Under Captain S. N. Taylor, she left New York for Shanghai on 10 February 1864, arriving at Hong Kong on 5 May 1864.⁴¹⁴ *Kiukiang* was in the Yangtze River line of Olyphant and Co. until near the end of 1865, when she and *Poyang* were sold to Russell and Co. for Tls. 156,000 for operation out of Hong Kong.⁴¹⁵

Olyphant and Co. seem not to have been engaged in shipping for the next two or three years, but in the summer of 1868 they undertook an opposition to the Shanghai S. N. Co. and the Union S. N. Co. on the Yangtze. Their first steamer (apparently chartered) was *Hong Que*, a little vessel with the engine of *John T. Wright*. As she could carry only 300 tons, neither of the established companies thought it worth while to oppose her. However, Olyphant and Co. chartered *Fung Shuey*, sending

⁴¹¹ NCH, 9 August 1862.

⁴¹² BSL, 7 January 1865.

⁴¹³ The owners of *Kiukiang* included William W. Parkin, Robert M. Olyphant, Anthony B. Neilson, William Neilson and George W. Talbot, then partners in the firm, and Augustus A. Hayes, Jr., later a partner.

⁴¹⁴ BSL, 17 February 1864 and 20 July 1864.

⁴¹⁵ Edward Whittall to James Whittall, 8 November 1865. Jardine, Matheson and Co. archives at Cambridge University. For material from this source (later denoted by JMA) I am indebted to Dr. K.-C. Liu for the notes and to Messrs. Matheson and Co. of London for permission to use them.

her with a cargo from Hong Kong to Shanghai, the arrangement being that Captain Hildreth paid them 10 per cent on gross receipts, 5 per cent as commission and 5 per cent as brokerage allowed the Chinese. On her arrival in the north, it was intended to place her on the Yangtze, and as this was more serious opposition, the regular lines planned to run *Tah Wah* against her. *Fung Shuey*, however, made at most a trip or two. Then Olyphant and Co.'s opposition collapsed and *Fung Shuey* was sold to Augustine Heard and Co., as related above.⁴¹⁶

A few years later Olyphant and Co. returned to the Yangtze as managers of the Union Steam Navigation Co., as previously mentioned, and while this was primarily a British company, its affairs were closely involved with those of all three of the most prominent American houses in China and some account of it may be of interest.

In early March 1867, the iron paddle steamer *Tunsin* of 773 tons gross, built in 1863, was purchased from H. Elias and G. Barnet,⁴¹⁷ principally by Chinese, with a view to establishing an opposition to the S. S. N. Co. on the Yangtze. Formally, the purchase was made on 21 March 1867 by Francis Arthur Groom of Glover and Company. The following month the owners of *Tunsin* purchased *Rona*, an iron paddle steamer of 1,215 tons gross built in 1862, from Jardine, Matheson and Co. for Tls. 85,000, and *United Service*, an iron screw steamer of 903 tons gross built in 1857.⁴¹⁸ The two former steamers were placed in service on the Yangtze and the latter on a line between Shanghai, Chefoo and Tientsin. About July 1867 the Union S. N. Co. with Glover and Co. (later Glover, Dow and Co.) as managers,⁴¹⁹ was formed with a capital of 2,000 shares (later increased to 2,040) of Tls. 100 each and took over the two steamers on the Yangtze service, later adding *Glengyle*, an iron side-wheel steamer of 1,933 tons gross built in 1864, also acquired from Jardine, Matheson and Co.⁴²⁰ The

⁴¹⁶ This account of Olyphant and Co.'s opposition is taken largely from letters of George F. Heard to his brothers, dated 23 July 1868, 14 September 1868, and 24 September 1868. *HC*. Also, Olyphant and Co. had dispatched the new steamer *Augusta* to Japan early in 1868.

⁴¹⁷ It is said that *Tunsin* was originally built for use as a blockade runner in the American Civil War. Messrs. John Swire and Sons, the managers of the China Navigation Co., have kindly informed me that *Tunsin* was the Chinese 'Hong' name for Barnet and Co.

⁴¹⁸ *NCH*, 8 March 1867 and 8 April 1867. The sale of *Rona* was not completed until about the beginning of June (letter of F. B. Johnson to James Whittall, 6 June 1867. *JMA*). For further information on *United Service* (later *Cheang-Hock-Kian*), see under A. Heard and Co. above.

⁴¹⁹ Some account of the finances of the Union S. N. Co. will be found in Appendix IV.

⁴²⁰ *Glengyle* was sold conditionally in March 1869 for Tls. 145,000 (letter of F. B. Johnson to William Keswick, 30 March 1869. *JMA*) and her acquisition announced at the Union S. N. Co. meeting, 22 June 1869 (*NCH*, 26 June 1869), but payment for her was not completed until February 1872 (report of U. S. N. Co. meeting on 3 June 1872. *NCH*, 8 June 1872), the title to the ship being transferred on 1 March 1872 (*BD*). The Union S. N. Co. was having difficulty in paying for *Glengyle* and at the semiannual meeting held on 6 February 1871 the shareholders authorized the issue of Tls. 120,000 of ten per cent debentures. Of these Tls. 59,200 were for three years from 1 April 1871 and Tls. 28,000 for five years, the remainder being reserved for future issue (*NCH*, 8 February 1871 and 4 August 1871).

new company did not, however, enter the coastwise trade at first and *United Service* was disposed of elsewhere.

By 1870, Glover, Dow and Co. had gotten into financial difficulties and the directors of the Union S. N. Co. were looking around for more stable connections. About this time, Augustine Heard and Co., through themselves and their friends, had secured control of 1,040 of the Union Co.'s shares, with the thought of taking the agency of the latter, if Russell and Co. would support the move.⁴²¹ However, Russell and Co. felt that such a move would be a violation of the agreement of May 1867 and declined to give their assent. Thereupon Heard and Co. offered the shares to Russell and Co. at cost and interest, but the latter did not take them up. Heard and Co. then approached Olyphant and Co., who were also uninterested in buying the shares, apparently because they saw their way clear to securing the agency without the control of the shares. It seems that the directors of the Union S. N. Co., in their effort to secure new managers for their enterprise, approached Olyphant and Co., who at first were uninterested but later changed their minds. Accordingly, at a meeting of the directors of the Union Co. the general agency was offered to Olyphant and Co. and accepted for the latter by E. A. Hitchcock.⁴²² The agreement, dated 11 March 1871 and covering the period from 31 March 1871 to 31 March 1874, was subsequently ratified at an extraordinary meeting of the shareholders of the Union S. N. Co. held on 25 March 1871, L. H. Stoddard, the general manager, being retained as a clerk.⁴²³ Augustine Heard and Co. did not oppose the move, partly because they preferred that Olyphant and Co. should have the agency, if they could not have it themselves, partly because they feared that opposition would result in a decline in the value of the Union Co.'s shares.⁴²⁴ In the meantime, the directors purchased the former P. & O. steamer *Sultan* and converted her for use as a hulk at Kiukiang.

On 14 April 1872, *Rona*, which had been placed in coastal service following the acquisition of *Glengyle*, while on a voyage from Shanghai to Swatow, was lost in collision with the Messageries Maritimes steamer *Ava* twenty miles from Turnabout, with the loss of sixty lives,⁴²⁴ and later that year the directors decided to abandon the river trade and turn to the coastwise route between Shanghai, Hong Kong and Canton. Accordingly, *Glengyle* and *Tunsin* were sold to the China Navigation Co., being de-

⁴²¹ Letter of G. F. Heard to his brothers, 9 March 1871. *HC*, Vol. EA1.

⁴²² Letter of G. F. Heard to his brothers, 12 March 1871. *Ibid*.

⁴²³ *NCH*, 29 March 1871. See also *Agra Bank vs. Olyphant and Co.*, *NCH*, 20 November 1873.

⁴²⁴ *NCH*, 27 April 1872. *Rona* was insured for Tls. 63,000 (*NCH*, 8 June 1872).

livered on 31 March 1873.⁴²⁵ The seagoing iron screw steamer *Acantha* of 1,042 tons gross, built by J. G. Lawrie at Port Glasgow in 1868 and then in China, was purchased on the spot for Tls. 82,500, and *Amarapoorra*, an iron screw steamer of 1,330 tons gross, built at Dumbarton in 1871, was purchased in London for £29,000 and renamed *Kwangchow*. The latter, however, was lost on the way out by stranding at Bunder Mareeah, seventy miles west of Cape Guardafui on 8 August 1873,⁴²⁶ so the company, having only one vessel of their own, had to charter additional tonnage and at one time or another chartered the steamers *Thales*, *Craigforth*, *City of Exeter* and *Mecca*.⁴²⁷ The new service, however, was not profitable and at an extraordinary meeting held on 3 March 1874 the stockholders voted unanimously to dissolve the company as of 1 March preceding, and this was confirmed at an extraordinary meeting held on 1 June 1874.⁴²⁸ *Acantha*, which had been operating on the Japanese coast under charter to the 'National S. S. Co. of Nipon' since the end of May 1874, was sold the following August to the Japanese government for \$118,000 for use in the Formosa Expedition and became *Tokai Maru* of the Mitsubishi Mail S. S. Co. and later of the Nippon Yusen Kaisha.⁴²⁹ Her end came when she was sunk in collision fifteen miles off Hakodate, 29 October 1903.

About this time, freights were good and cargo plentiful on the coast and Olyphant and Co. were operating a fairly regular service of their own between Shanghai, Amoy and Swatow, with occasional trips to Keelung and Hong Kong, as well as to Japan and on the North China route, employing the steamers *Cadiz*, *Kiushiu*, *Pingon* and *Shaftesbury*. *Kiushiu* was owned by partners in the firm. In the case of *Shaftesbury*, Olyphant and Co. are known to have been her managing agents,⁴³⁰ and it is prob-

⁴²⁵ Report of the meeting of shareholders of the Union S. N. Co. (*NCH*, 6 September 1873). *Tunsin* was the first vessel to sail under the China Navigation Company's colors, leaving Shanghai for Hankow on her first trip for these owners on 10 April 1873, followed three days later by *Glengyle* (from information kindly furnished by Messrs. John Swire and Sons). *Glengyle* was wrecked on Namoa Island on 9 November 1875 and *Tunsin* converted in 1883 for use as a landing stage at Swatow.

⁴²⁶ *Nautical Magazine*, XLII (1873), 1034. *Kwangchow* had been insured for £35,000.

⁴²⁷ *Thales* (1869), 1,154 g.t., James Galbraith, managing owner. Later *Veteran*, then *Fushimi Maru*.

Craigforth (1869), 1,109 g.t., C. Williamson, managing owner. Wrecked at Roseheart, 18 October 1884.

City of Exeter (1870), 1,054 g.t., J. Holman and Sons, managing owners. Foundered in the Bristol Channel, 11 March 1888.

Mecca (1872), 1,067 g.t., R. M. Hudson, managing owner. Lost on Ipili Reef in the Prince of Wales Channel, Torres Straits, on 24 December 1878.

⁴²⁸ *NCH*, 6 June 1874.

⁴²⁹ *JWM*, 8 August 1874.

⁴³⁰ Cf. C. B. Ellis vs. C. P. Blethen, *NCH*, 23 May 1874.

able that their connection with the other two steamers was similar.

Cadiz was the oldest of the four, an iron screw steamer of 816 tons gross built at Glasgow in 1853 for the Peninsular and Oriental S. N. Co., who were still operating her in the Far East in 1870 and (according to her British document) sold her to a Russian subject on 25 October 1870. The purchasers were Textor and Co. and the purchase, although perhaps not consummated, had been announced the preceding August.⁴³¹ Her new owners renamed her *Rhein* and placed her under the North German flag. At the beginning of 1871 her sale to the Japanese for \$43,000 was announced,⁴³² but by March 1872 she had reverted to the name *Cadiz* and was flying the American flag, then owned by P. Hussey, who sold her to J. H. Mackie of Mackie's Hongkew Godown, on 28 May 1872,⁴³³ and the latter was the owner during the period (approximately from July 1872 to August 1873) in which she was operated by Olyphant and Co.

Cadiz was put up at auction at Shanghai on 17 September 1873 by the China and Japan Trading Co. and bought in for Tls. 25,500, the bidding having gone to Tls. 25,400.⁴³⁴ The following month she was again put up at auction and this time was sold for Tls. 21,900 to the China Navigation Co., who shortly converted her to a hulk and stationed her at Kiukiang,⁴³⁵ selling her to the Chinese in 1922.⁴³⁶

Kiushiu was Olyphant and Co.'s own steamer in the sense that she was owned by partners in the firm. She was an iron screw steamer of 839 tons gross, built at Cork, Ireland, as *Viola* in 1862, her first registered owner being Anthony George Robinson of London, presumably a relative of George Robinson, her builder.⁴³⁷ On 19 July 1862, A. G. Robinson executed a certificate of sale in favor of Jardine, Matheson and Co. (more precisely, of certain of their partners and connections) and on her arrival in China in the latter part of the year they acquired her themselves, apparently in the hope of selling her to the Japanese.⁴³⁸ This seems to have taken the better part of two years, until they sold her to the Prince of Satsuma for \$95,000, with delivery in December 1864.⁴³⁹ In 1867, the

⁴³¹ See *NCH*, 4 August 1870, 18 August 1870, 1 November 1870.

⁴³² *NCH*, 11 January 1871.

⁴³³ *CRS*, Shanghai.

⁴³⁴ *NCH*, 20 September 1873; *CRS*, Shanghai.

⁴³⁵ *NCH*, 23 October 1873 and 11 July 1874.

⁴³⁶ *BD*.

⁴³⁷ See Ernest B. Anderson, *Sailing Ships of Ireland* (Dublin, 1951), p. 242.

⁴³⁸ Letter of Jardine, Matheson and Co., Hong Kong, to James Whittall (then partner at Shanghai), 1 November 1862. *JMA*.

⁴³⁹ *GL*, *NCH*, 27 April 1867. M. Paske-Smith, op. cit., p. 223, implies that she was sold through Dutch agents, but this may be due to an error in the records. See also *Commercial Reports from Her Majesty's Consuls in China, Japan and Siam, 1865* (London, 1866), p. 222, and *1866-1868* (London, 1868), p. 294, which indicate that the sale may not have been completed until 1865.

prince placed her in service on the China coast in competition with her former owners, a procedure to which they promptly and naturally objected, inasmuch as they still held a mortgage on the ship.⁴⁴⁰ In consequence, Satsuma seems to have sold *Viola*, now named *Kiushiu*, and she was reregistered British in that year, in the name of Ryle Holme of the firm of Glover and Co. In early 1869 she was sold back to Jardine, Matheson and Co., who sold her on 22 November 1871 to A. A. Hayes, Jr., and E. A. Hitchcock, partners in Olyphant and Co. At this time she was transferred to the American flag, the bill of sale being recorded at the United States consulate general at Shanghai on that date.⁴⁴¹ Later her owners were given as Hayes and Others, and apparently there were changes in the ownership of some of the shares in *Kiushiu*, but the details are not available.⁴⁴² Olyphant and Co. presumably operated her from the time she was purchased by Hayes and Hitchcock, and they were still operating her when she left Shanghai for Japan on 4 June 1874. Following her arrival there, *Kiushiu* traded in Japanese waters for a while and was sold to the Japanese government in August 1874 for use in the Formosa Expedition, though she does not appear to have been handed over until about the end of October.⁴⁴³ As *Kiushiu Maru* she was shortly afterward transferred to the Mitsubishi Mail S.S. Co., but apparently was sold when the N. Y. K. was formed. Under the name of *Toyokuni Maru* she was later owned by the Japan Coal Co. and then by Takahama Chinjo, in whose name she was when lost about 1892.

Pingon has already been treated under Russell and Co. Olyphant and Co. operated her at least from the end of December 1872 to the end of May 1873, J. H. Mackie being her owner at this time. Shortly afterward, she was withdrawn from service for lengthening, as described above.

Shaftesbury was an iron screw steamer of 680 tons gross, built at Sunderland in 1862. After passing through a variety of ownerships, British and foreign, she was purchased at Hong Kong toward the end of 1871 by Captain Robert William Hutchison, formerly master of *Rona*, who commanded her himself. According to both British and American official records, he sold *Shaftesbury* on 18 December 1872 to C. P. Blethen, head of the shipbuilding firm of S. C. Farnham and Co., Shanghai, and shortly afterward she was transferred to the American flag, her British registry being closed on 23 December. Actually, Captain Hutchison ap-

⁴⁴⁰ F. B. Johnson to James Whittall, 2 October 1867. *JMA*.

⁴⁴¹ *HMD* 31, I, 605. This information has been verified from the transcript of *Kiushiu*'s British register and from the United States consular returns from Shanghai. The payment of the purchase money was not completed until April 1872.

⁴⁴² E. A. Hitchcock withdrew from partnership in Olyphant and Co. on 30 June 1873.

⁴⁴³ *NCH*, 15 August 1874; *JWM*, 24 and 31 October 1874.

pears to have sold or agreed to sell *Shaftesbury* two or three months earlier in order to acquire a larger steamer, and the former ship went to the Shanghai Dock Co. for extensive rebuilding. She had a hurricane deck placed on her and received various other alterations and improvements, making her in every respect more suitable for the China coast and river trade.⁴⁴⁴ On 24 December, the alterations being completed, she left the Old Dock and on the thirty-first under Captain W. Blethen, C. P. Blethen's brother, she sailed from Shanghai for Hiogo, dispatched by Morris, Lewis and Co.⁴⁴⁵ who seem to have managed her for the next five or six months. After that, she was operated by Olyphant and Co., though still owned by C. P. Blethen, until she was sold on 9 May 1874 to the Japanese government in connection with the Formosa Expedition and changed her flag, becoming *Shario Maru*.⁴⁴⁶ The government turned her over to the Mitsubishi Mail S.S. Co. and she was on their fleet and that of their successors, the Nippon Yusen Kaisha, until sold about 1890. She was later owned by Baba Daijiro and was wrecked about 1895.⁴⁴⁷

Olyphant and Co. appear also to have chartered steamers for their own coastwise services. In particular, they had the British steamer *Aegean* on the line between Shanghai, Hong Kong and Canton in the fall of 1872 and the British steamer *Consolation* on the Northern Route from late September to early November 1874.⁴⁴⁸ Furthermore, they were involved in other attempts at opposition on the Yangtze and local routes, using chartered steamers (for instance, on the Ningpo route in 1873), but these either never materialized or were of such short duration that there is little record of them and they can hardly be said to have played any real part in steam navigation in China.

Olyphant and Co.'s final venture in steam shipping was in the trans-pacific trade. Sometime in 1877 they entered into a contract with the Peruvian government to run a line of large steamers between Peru and China for the conveyance of mails, passengers and cargo. The contract covered a period of five years, during which time Olyphant and Co. were to receive an annual subsidy of \$160,000 and certain concessions in connection with the sale of nitrates. In return, the steamers were to make twenty-eight trips a year between China and Peru, calling at the Sand-

⁴⁴⁴ *NCH*, 26 December 1872.

⁴⁴⁵ *NCH*, 9 January 1873.

⁴⁴⁶ *JWM*, 16 May 1874.

⁴⁴⁷ *Lloyd's Register*, 1895-1896, posted.

⁴⁴⁸ *Aegean* (1870), 1,157 g.t., Charles Williamson of Leith, managing owner. Lost, 23 June 1888. *Consolation* (1873), 1,182 g.t., Donald Robert Macgregor of Woodburn, County of Edinburgh, managing owner. Wrecked at Cape Guardafui, 11 July 1883.

wich Islands and importing not less than 500 Chinese laborers (of which there was an urgent need in Peru) each trip. The first (and apparently the only) ship of the new line was the former P. & O. steamer *Nemesis* (1857), 3,446 tons gross. Registered from London she arrived at Hong Kong on 24 November 1877 and on 15 December changed her name and flag, becoming the Belgian *Perusia* of Antwerp. The Hong Kong authorities, however, refused to permit the embarkation of Chinese passengers, so *Perusia* left on her first trip to Callao without passengers. The agents then decided that on the return voyage *Perusia* should go to Canton to embark her passengers and accordingly Olyphant and Co. applied on 24 May 1878 to ship '1,050 steerage, or deck passengers' by *Perusia*. But only 137 applicants were established as bona fide passengers and permitted by the Chinese authorities to embark, and *Perusia*, after being detained for some time by her agents at Whampoa, sailed for Honolulu and Callao on 22 July 1878. This was the final sailing on the line, as about this time Olyphant and Co. were declared bankrupt and their contract with the Peruvian government fell through (from report of the commissioner of Imperial Chinese Maritime Customs at Canton, quoted in the *Tokio Times* for 15 May 1880). *Perusia*, which had been registered in the name of Soc. Anon. de Nav. à Vapeur Belge, returned shortly to the British flag and to her original name, being broken up in 1891.

VII. OTHER AMERICAN SHIPOWNERS IN CHINA

Of the other American shipowners in China, one of the earliest was Captain James Bridges Endicott. He had a variety of interests and in particular was connected with the Union Dock Co. of Hong Kong and Whampoa, Ltd., of which he was sometime secretary, and with the Hong Kong, Canton and Macao Steamboat Co., of which he was a director from its formation up to the time of his death, being sometime chairman of the board. Captain Endicott's steamers *Spark*, *Spec* and *Lily* have already been mentioned. In addition, he owned *Rose*, a British-built river steamer of 125 tons, which had been in service between Hong Kong and Canton. The company owning her failed in 1858 and Captain Endicott purchased her and subsequently placed her under the American flag, sending her in May 1861 from Hong Kong to Shanghai, where she was put on the Ningpo route.⁴⁴⁹ By the end of the year *Rose* was in General Ward's fleet,⁴⁵⁰ and later she was in the Chinese Transport Service. As of Febru-

⁴⁴⁹ CRS, Shanghai. Cf. also CM, 15 April 1858 and 20 May 1858.

⁴⁵⁰ Mixed Court, C. E. Hill vs. Estate of Yang Taikee, NCH, 21 January 1875.

ary 1864 she was at Shanghai, having been laid up for some time previously,⁴⁵¹ and this is the latest information we have on her.

Captain Endicott also owned (or managed) the steam tug *Little Orphan*, A. A. Benning, master, and C. E. Wembert, engineer, which had come down to Hong Kong from Shanghai in the latter part of 1865⁴⁵² (see under Augustine Heard and Co.). His brother, William Endicott, who has previously been mentioned under Augustine Heard and Co., owned shares in a number of steamers, both when he was in China and after his return to Salem, but does not seem actually to have operated vessels.

The steamer *Kumsing* has already been mentioned as having made one voyage on A. Heard and Co.'s Hong Kong-Shanghai line. Her career under the American flag was brief. She was a steamer of 467 tons, built at Whampoa in 1862. Her registered owner, F. H. Haskell (Haskall), has already been referred to in connection with Heards' steamer *Kinshan*. He was associated with Thomas Hunt and Co. (being admitted as a partner on 1 July 1861) and with Captain J. B. Endicott, and it seems that Mrs. Endicott and Mrs. Haskell were sisters.⁴⁵³ On the voyage just mentioned in Heards' line, *Kumsing* left Canton under Captain W. W. Allen on 28 March 1863 and, after calling at Hong Kong, arrived at Shanghai on 9 April. On the eighteenth she left for Nagasaki, where she was sold on 15 June to the Prince of Hitchigen for \$125,000.⁴⁵⁴

Another early owner of American steamers in China was Gideon Nye, Jr., a well-known figure in the Far East around the middle of the nineteenth century, a partner in the firm of Nye Bros. and Co., and sometime United States vice-consul at Macao, who was instrumental in having *Carolina* brought out from America in 1855, and who had an interest in *River Bird*, which came to China the same year. The latter vessel has already been discussed. *Carolina* was a wooden screw steamer of 545 tons built by Birely and Son at Philadelphia in 1849. Soon after her comple-

⁴⁵¹ *NCH*, 4 January 1862; *NCH*, 27 February 1864; *F. of C.*, 18 February 1863.

⁴⁵² See *The Chronicle and Directory for China, Japan and the Philippines*, 1868.

⁴⁵³ Letter of Franklin Delano Williams to his wife, Hong Kong, 6 February 1862. Franklin Delano Williams went out to China in the early 1850's, being associated first with Wolcott, Bates and Co. and later with Wetmore and Co., afterward becoming a partner in Wetmore, Williams and Co. (see under Wetmore, Cryder and Co. below). On 1 April 1863, Williams formed his own firm at Hong Kong under the title of Williams and Co., which was forced to suspend payments in December 1864, due to the failure of Allen and Co. of Shanghai. Subsequently, F. D. Williams became American vice-consul at Hong Kong and died at Yokohama on 7 September 1865. A series of letters from him to his wife, written during the periods 1854-1857 and 1861-1865, have recently been given me through the kindness of Mr. Emil Pieper of Buffalo, N. Y. It is intended to place these letters, which furnish much interesting information on the life of the foreign residents of China in this period, at the Peabody Museum of Salem. These letters and associated letters will hereafter be referred to as *FDWL*.

⁴⁵⁴ *CRS*, Nagasaki. *GL*, *NCH*, 27 April 1867.

tion in December 1849, she was purchased by the Pacific Mail S.S. Co., who operated her on the San Francisco-Panama line until the end of 1851.⁴⁵⁵ Later she was bought in California for Gideon Nye and brought to China by Captain Sampson in 1855, leaving San Francisco on 8 September and arriving at Hong Kong on 11 November. Conditions there not being favorable for her employment, she was sent to India the following year.⁴⁵⁶ Under Captain Sampson, *Carolina* left Hong Kong on 10 January 1856 for Manila on her way to Calcutta, where it was said there was much need for a vessel of her type.⁴⁵⁷

A prominent American firm in China, especially in the 1850's and 1860's, was Thomas Hunt and Co., whose activities included shipbuilding and repairing. Among the large American steamers in China, *Kinshan* and *Kiang Loong* were set up in their yard at Whampoa, and in addition they built a number of small steamers, including *Haining* and *Yuenfah*. Their shipowning activities were not extensive and appear to have been largely in the neighborhood of Hong Kong. In 1856 they set up for themselves at Whampoa the small steamer *Cum Fá*, which had been brought out from New York in parts. She was launched in September 1856 and made her trial trip on 22 October.⁴⁵⁸ Thomas Hunt and Co. planned to run her between Whampoa and Canton, but the breaking out of the Anglo-Chinese war of 1856-1857 put a stop to that and after Hunts abandoned their plant at Whampoa to the Chinese on 13 January 1857, *Cum Fá*, being suited only for river work, spent most of the next year at Macao with very little employment.⁴⁵⁹ Her owners returned to Whampoa on 22 February 1858 and *Cum Fá* was again placed in river service. In November 1858 she was reported sold to the French government,⁴⁵⁹ but apparently the sale fell through. On 4 May 1859, *Cum Fá* while on her way from Macao to Kum-oon on the West River was seized by some of her Chinese passengers, who stole \$7,000 from fellow passengers returning from California and ran the ship ashore. Captain Graves was cut about the head, but not seriously, and the steamer herself not much damaged.⁴⁶⁰ Later she became a Chinese revenue cutter.

The seagoing wooden steamer *Unicorn*, built in 1836, has the distinction of being the pioneer transatlantic steamer of the Cunard Line. Ed-

⁴⁵⁵ For details of *Carolina* and her history, see the *Journal of the Franklin Institute*, XLVIII (1849), 332-333; also J. H. Kemble, op. cit., p. 218.

⁴⁵⁶ G. H. Preble, op. cit., p. 134.

⁴⁵⁷ *CM*, 10 January 1856.

⁴⁵⁸ *HExD* 29, *passim*, especially, p. 83.

⁴⁵⁹ *CM Supplement*, 18 November 1858.

⁴⁶⁰ *CM*, 5 May 1859.

ward Cunard later sent her to the Pacific coast, selling her to the Pacific Mail S.S. Co., who operated her occasionally until April 1853, when she was sold and sent to Australia.⁴⁶¹ She came to China in the beginning of 1855 and, after some change of ownership, was being operated on the coast in 1856 by Captain John Brown, who was master and owner. While *Unicorn* was towing a junk on 15 August 1856, Captain Brown had his leg broken by being caught in a hawser and suffered other injuries, from the effects of which he died at Hong Kong on 23 August. The steamer was purchased at auction from his estate on 3 October by Thomas Hunt and Co. for \$6,000 and placed under the American flag.⁴⁶² The new owners reconditioned her and had her ready for sea, save for final docking for inspection, when they were forced to abandon their premises at Whampoa in January 1857. *Unicorn*, lacking inspection, could not get insurance and was consequently unavailable for passenger or cargo carrying.⁴⁶³ Early in 1857 she was renamed *E. H. Green* and placed under the Chinese flag (if contemporary shipping reports are correct). She was at Hong Kong awhile and then went to Macao, where she arrived on 23 March 1857, returning to Hong Kong on 4 July. On 4 August, she left for Foochow, where her owners planned to use her as a tug. Within a few months she apparently secured the needed inspection, as in October she left Foochow for Manila. A note in the *China Mail* for 11 February 1858 states that 'The *E. H. Green*, though anxiously looked for [at Amoy] from Manila, has not arrived.' Perhaps she wasn't intending to, as the next report of her is to the effect that she left Manila on 29 May 1858 and arrived at Hong Kong on 10 June, consigned to W. M. Robinet and Co.,⁴⁶⁴ a fact which suggests that by then Thomas Hunt and Co. had sold her, although W. M. Robinet was connected with T. Hunt and Co. On 18 July she arrived at Whampoa and was laid up. As of 19 May 1859, she was still laid up there,⁴⁶⁵ and this is the latest reliable information I have of her.

Thomas Hunt and Co. also appear regularly in maritime reports as consignees of *Spark* and *Lily*, but Captain Endicott seems to have owned them. Certainly this was the case as of January 1857.⁴⁶⁵ Around 1863, Hunt and Co. had some connection with the tug *Martin White*, to be treated later. In 1866 they sold their properties in China to Jardine, Matheson and Co., the shipbuilding and repairing facilities around

⁴⁶¹ For the earlier history of *Unicorn*, cf. C. L. D. Duckworth and G. E. Langmuir, *Clyde and Other Coastal Steamers* (Glasgow, 1939), p. 11 and p. 153; J. H. Kemble, *op. cit.*, p. 249; and an article by Osgood Williams in Erik Heyl's *Early American Steamers*, II, 257-259.

⁴⁶² CM, 9 October 1856, 16 October 1856.

⁴⁶³ CM, 17 June 1858.

⁴⁶⁴ CM, 19 May 1859.

⁴⁶⁵ HExD 29, p. 96.

Hong Kong being taken over by the newly formed Hong Kong and Whampoa Dock Co.

Mr. C. E. Hill, a partner in Thomas Hunt and Co., owned a small steamer called *Keor-jeor*. She was later in the fleet of General F. T. Ward and was captured and sunk in August 1863.⁴⁶⁶ Hill later (1878) owned another small steamer (see *HMD* 31, I, 63) but her identity is not known.

Henry G. Ward was in the commission business at Shanghai in the early 1860's, trading as Ward and Co. The tug *Martin White* was advertised by him in the latter half of 1862 and the steamer *Cricket* appears consigned to him in the latter part of 1861 and the first half of 1862. *Martin White*, of which further details will be given below under H. Fogg and Co., had been built in Philadelphia in 1854 and had arrived in China in May 1862. A month or so later, she was purchased half by General H. T. Ward and half by Yang Taikee and was employed by Ward's force until the latter part of the year, when she was sold.⁴⁶⁷

Cricket was a small steamer of 81 tons, built at Hong Kong early in 1861, and originally British. Soon after completion she came to Shanghai and is listed as running on the Yangtsze with Dent and Co. as consignees. H. G. Ward acquired her and placed her under the American flag prior to September 1861, selling her on 12 December following.⁴⁶⁷ Her actual owner during this period was apparently the Taoutai, who was reported to have purchased her for \$25,000, and, like *Martin White*, she served on General Ward's fleet.⁴⁶⁸ As of December 1865 she was owned by the Chinese government, and this is the last information we have on her.⁴⁶⁹

In his ownership of the above steamers H. G. Ward appears to have been acting as agent for General F. T. Ward, and it is probably in this capacity that Henry G. Ward appears as the first owner of the steamers *Chikiang*, *Daiching* and *Kiangsoo*, but General Ward was killed before they were completed.⁴⁷⁰

Chikiang was a wooden screw steamer of 240 tons, built in 1862 by James C. Jewett at New York. In her first register, dated 24 December 1862, she is listed in the name of Henry G. Ward. On 16 June 1863, she was successively listed in the names of three different owners, of whom the first was William H. Fogg of H. Fogg and Co., and the last was again

⁴⁶⁶ Mixed Court, C. E. Hill vs. Estate of Yang Taikee, *NCH*, 21 January 1875 and 28 January 1875. *HMD* 31, I, 70-71.

⁴⁶⁷ *CRS*, Shanghai.

⁴⁶⁸ Mixed Court, C. E. Hill vs. Estate of Yang Taikee, *NCH*, 21 January 1875. See also *NYH*, 20 December 1861.

⁴⁶⁹ *NCH*, 23 December 1865.

⁴⁷⁰ Benjamin C. Wright, *op. cit.*, p. 122.

H. G. Ward, from whom she was purchased by the Navy on 22 June for \$30,000, her name being changed to *Tulip*. On 11 November 1864 she was destroyed by a boiler explosion at Ragged Point, Virginia.⁴⁷¹

Kiangsoo was a sister ship of *Chikiang* and her history was identical with that of the latter ship through their purchase by the Navy on 22 June 1863. *Kiangsoo*, which became U.S.S. *Fuchsia*, survived the war and was sold on 23 September 1865 to N. L. and G. Griswold. Her subsequent career has already been described in connection with Russell and Co.

Dai Ching was larger, a wooden screw steamer of 729 tons, also built in 1862 by James C. Jewett. She was first registered in H. G. Ward's name on 24 December 1862 and on 21 April 1863 she was purchased by the Navy for \$117,575, but not renamed. She went ashore and was abandoned to the Confederates in Combahee River, South Carolina, 26 January 1865. *Dai Ching* was not exactly a flyer, as the Navy states her maximum speed as six knots and her average speed as four.⁴⁷²

An American firm of the period which dated back to the early days of Shanghai was Hiram Fogg and Co. W. H. Fogg, the senior partner in the 1870's, was later associated with the Pacific Mail S.S. Co.⁴⁷³ The steamers operated by H. Fogg and Co. were for the most part small. Some were registered in the name of John T. (or F.) Twombly, a partner in the firm.

Fogg and Co.'s first steamer of which we have record was the wooden paddle tug *Martin White* of 189 tons, which had been built at Philadelphia in 1854 for service on the Pacific coast. Charles W. Brooks and Co. of San Francisco sent her to China in 1862. Under Captain C. J. Lovett, *Martin White* left San Francisco 18 March 1862 and arrived at Shanghai 12 May 1862, consigned to H. Fogg and Co.⁴⁷⁴ They seem to have operated her (possibly as agents for C. W. Brooks and Co.) for about a month. Her sale for Tls. 41,000 around this time was reported and for the remainder of 1862 she is advertised by Ward and Co. (see above). It appears that she was actually owned half by General F. T. Ward and half by Yang Taikee and was employed by Ward's force.⁴⁷⁵ Following General Ward's death, *Martin White* was sold and beginning in January 1863 she is regularly advertised by A. L. Freeman, who was connected with Fogg and Co.,⁴⁷⁵ but seems to have operated steamers on his own account. *Martin White* continues in his name at least as late as August 1864. At the

⁴⁷¹ *History of the Union and Confederate Navies*, II, 1, 226

⁴⁷² *Ibid.*, II, 1, 70.

⁴⁷³ Cf. *JWM*, 30 January 1875.

⁴⁷⁴ *NCH*, 17 May 1862.

⁴⁷⁵ E. Griffin, *op. cit.*, p. 258.

same time she is listed in the name of T. Hunt and Co., and at the end of 1865 she again appears with H. Fogg and Co. as agents.⁴⁷⁶ On 26 September 1866, then owned by H. Fogg and Co., the *White* left Shanghai in ballast for Nagasaki and was sold to the Japanese there, 18 October 1866.⁴⁷⁷

The next addition to H. Fogg and Co.'s fleet was *Enterprise*, a wooden paddle steamer of 231 tons gross and 107 tons net, built by Henry Owens at San Francisco in 1861. In her first enrollment, dated 2 May 1861, William Curry (presumably the former captain of *Willamette*) is given as owner and master. In September of that year she acquired new owners in part and came to China late in 1862, arriving at Shanghai on 26 December. On arrival, she was acquired by H. Fogg and Co., who dispatched her for Hankow four days later.⁴⁷⁸ *Enterprise* operated in Fogg and Co.'s Yangtze service for a couple of years, but by the latter part of 1865 was laid up. Early in 1866 she was renamed *Tatung* and resumed service to Hankow. On 16 May 1868, she left Shanghai for Nagasaki in ballast and was lost on the way.⁴⁷⁹

The tug or small river steamer *Elfin* of 79 tons was built by Collyer and Lambert near Shanghai in 1862 and, according to contemporary shipping reports, was operated during the latter half of the year around Shanghai and on the Yangtze by Dent and Co. under the British flag.⁴⁸⁰ But by late November she appears in the consular returns as American and owned by Charles Collyer and others. Collyer and Lambert owned her for the next year or so, but H. Fogg and Co. seem to have operated her.⁴⁸¹ About this time the little steamer was seized at Kiukiang on the pretext that she did not have the requisite customhouse clearances and it has not been possible to follow the details of her subsequent movements. Ten years later, *Elfin*'s hull had become worn out and accordingly the machinery was transferred to a new *Elfin*, built by S. C. Farnham and Co. at the New Dock, Shanghai, and launched on 11 July 1873. The new steamer, however, does not seem to have had any American connections.

Another tug operated by Fogg and Co. was *Anna*, a little steamer of

⁴⁷⁶ *F. of C.*, 18 February 1869; *NCH*, 23 December 1865.

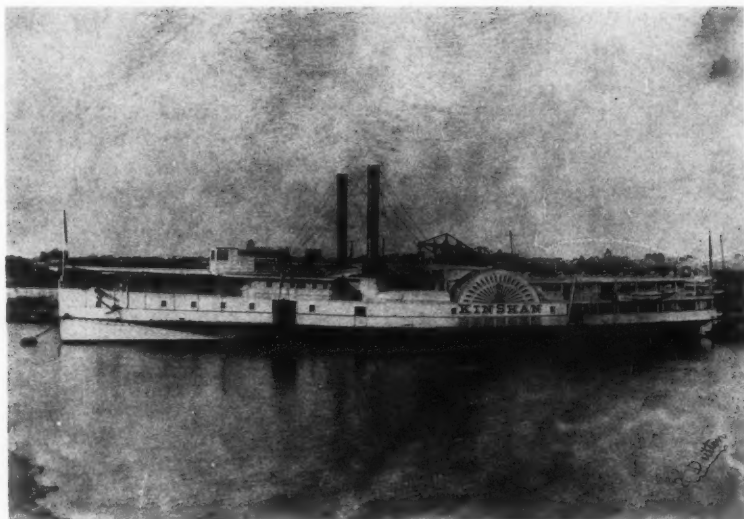
⁴⁷⁷ *CRS*, Shanghai, Nagasaki.

⁴⁷⁸ *CRS*, Shanghai; *NCH*, 3 January 1863.

⁴⁷⁹ The date of departure is from *CRS*, Shanghai. A report dated 30 June 1868 states that the American steamer 'J. A. Huig,' 107 tons, had been sunk on her way from Hong Kong to Japan (*SBF*, March 1954). This seems to refer to *Tatung*.

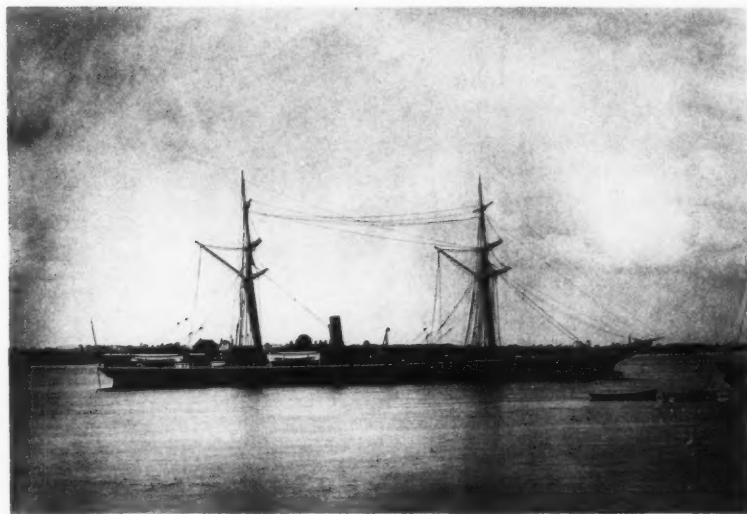
⁴⁸⁰ *NCH*, 21 June 1862, 1 November 1862, 3 January 1863. *Elfin* is not to be confused with the British-built *Elfin* (1862), 175 n. t., which came to China in 1863.

⁴⁸¹ *F. of C.*, 18 February 1863. *Elfin* was in the name of A. G. Lambert when she arrived at Shanghai from Kiukiang on 20 April 1863 (*CRS*, Shanghai) and this seems to be the latest record of her movements as an American vessel.



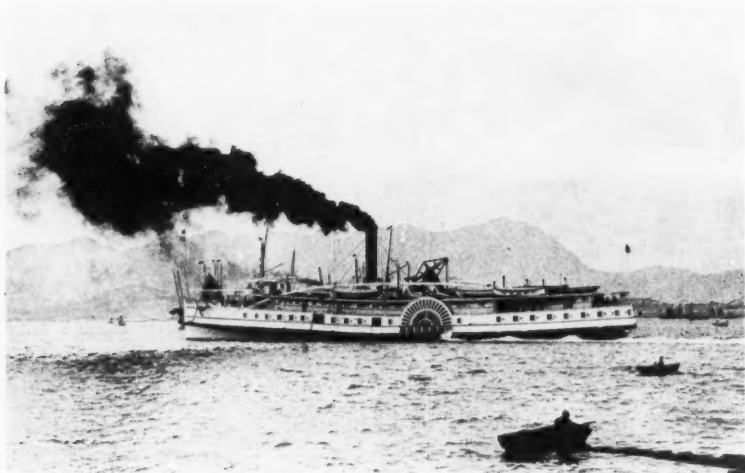
Kinshan, 1863, as originally built with two stacks. A. Heard and Company.

Courtesy of the Peabody Museum of Salem



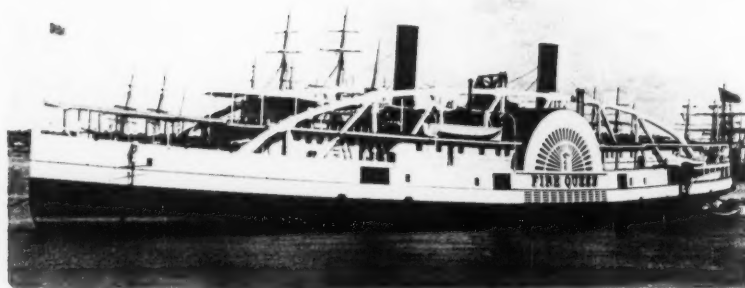
Glendaroch, 1871. Chartered by A. Heard and Company.

Courtesy of the National Maritime Museum, Greenwich



*Kin Kiang, 1863, Olyphant and Company. Later owned by
H. K., C. & M. S. B. Company.*

Reproduced by permission of the Philadelphia Commercial Museum



*Five Queen, 1864, Lindsay and Company. Later owned by
Shanghai Steam Navigation Company.*

Courtesy of the Peabody Museum of Salem

67 tons which had been built by J. R. Rideout at San Francisco in 1859. She was enrolled at San Francisco, 20 June 1859, with Thomas E. Truworthy as owner and master. This enrollment was renewed on 19 June 1860 and the latter enrollment superseded by a register dated 17 July 1862 in which *Anna* is owned by nine owners in 1/25 shares; 12/25 were held by Truworthy and 1/25 by Captain A. Blanchard, under whom she left San Francisco under sail in July 1862, arriving at Shanghai on 3 February 1863.⁴⁸² Upon her arrival she was used as a tug, H. Fogg and Co. apparently acting as her managers and with Captain Blanchard continuing in command. In the latter part of 1865, *Anna* is listed as laid up.

H. Fogg and Co. bought the steamers *Pah Loong*, 67 tons, in July 1868 and *Rising Sun*, 89 tons, on 15 June 1869. While it has not thus far been possible to establish the facts with certainty, it seems probable that the former was *Anna*. *Pah Loong* and *Rising Sun* left Shanghai for Hiogo in ballast on 18 June 1869.⁴⁸² Subsequently they were owned by the China and Japan Trading Co., in whose service they were when wrecked in a typhoon at Hiogo, 6 July 1871.⁴⁸³

Tah Wah, as mentioned earlier, was apparently purchased by H. Fogg and Co. in 1865 and was on their Yangtze line until sold to the Shanghai S. N. Co. in February 1867.

A. L. Freeman, as has been mentioned, was associated with H. Fogg and Co., but seems also to have operated steamers of his own, principally around Shanghai. In addition to *Martin White* and *Tah Wah*, Freeman, or A. L. Freeman and Co., owned the steamer *Mandarin* of 134 tons, said to have been built at Hong Kong or Macao in 1860,⁴⁸² which was on the Ningpo line in the first part of 1863, flying the American flag. American consular returns from Shanghai show that Freeman sold her on 3 August 1863. A year or two later she was being operated on the Yangtze by A. Heard and Co. under the name of *Rose*.

Another associate of Hiram Fogg and Co. was J. A. Wheelock, who, together with a Mr. Lacy, purchased Fogg & Co.'s cargo boat (lorcha and barge) business in 1861 and operated it under the name of Wheelock and Co.⁴⁸⁴ This firm owned very briefly *Union Star*, a wooden propeller steamer of 163 tons, which had been built as a schooner at Eden Landing, California, in 1861 and converted to steam shortly afterward. Her original owner was Richard Barrow of that place, but on 10 April 1862 she was

⁴⁸² CRS, Shanghai.

⁴⁸³ NCH, 7 July 1871; *Far East*, 17 July 1871.

⁴⁸⁴ Letter of Franklin Delano Williams to his wife, Shanghai, 11 September 1861, FDWL.

registered in the name of Captain George Balchen, who took her to China. She arrived at Shanghai from the States on 6 June 1862 and was sold to Wheelock and Co. On the nineteenth, during a trial trip, upon the captain's ordering more and more steam, the boiler burst, blowing the funnel, mast, and deckhouses overboard. Final count showed that sixteen lives were lost in the disaster.⁴⁸⁵ *Union Star* was subsequently rebuilt as *Monitor*.

On 18 July 1862 J. A. Wheelock jointly with H. Hancock purchased a one-fourth interest in the tug *Bunker Hill*, but she was managed by A. Heard and Co. (q.v.). The following August Wheelock and Co. acquired the small American steamer *Paysan*, 47 tons net, and operated her for the remainder of the year, mostly between Shanghai and Ningpo. Previously she had been owned by J. K. Rodgers and operated by Wetmore, Cryder and Co. *Paysan* appears to have been *Invejado*, a Portuguese screw steamer which had been built as *Squirrel* at Hong Kong in 1856 and fitted with English-made engines found on board a Russian prize during the Crimean War.⁴⁸⁶ As *Invejado*, she was operated around Hong Kong by B. S. Fernandes, but in April 1860 was being advertised for sale.⁴⁸⁷ She came to Shanghai in July 1861 and by the beginning of 1862 was owned by P. Loureiro, operator of the Shanghai Dock Co. and later a shareholder in the Shanghai S. N. Co.⁴⁸⁸ She seems to have become Chinese in March, becoming the American *Paysan* in May. Her history after January 1863 is not known.

In 1864, Collyer and Lambert built for Wheelock and Co. the tug *Hercules*, intended for service on the Yangtze and Whangpoo rivers.⁴⁸⁹ She was later under the British flag.

Wheelock and Co. failed in the spring of 1865, but later in the year J. A. Wheelock, together with his brother, formed a new firm under the same name.⁴⁹⁰ This enterprise gradually became British and still exists as Wheelock, Marden and Co. of Hong Kong.

S. C. Farnham and Co., an American firm founded in 1865, were shipbuilders. In the course of years they became more British in character and in 1900 merged with the British shipbuilding firm of Boyd and Co.,

⁴⁸⁵ *NCH*, 21 June 1862.

⁴⁸⁶ *CM*, 5 June 1856. Ownership of *Paysan* is taken from *CRS*, Shanghai.

⁴⁸⁷ *CM*, 26 April 1860.

⁴⁸⁸ K.-C. Liu, loc. cit., II, 161.

⁴⁸⁹ *NCH*, 11 June 1864.

⁴⁹⁰ F. D. Williams to his wife, Hong Kong, 14 April 1865; Fanny A. Wheelock (Mrs. J. A. Wheelock) to Mrs. F. D. Williams, Shanghai, 8 November 1865. *FDWL*.

to form S. C. Farnham, Boyd and Co., later the Shanghai Dock and Engineering Co. On 14 May 1872, S. C. Farnham purchased the former P. & O. liner *Chusan* from the Japanese at Nagasaki and placed her under the American flag.⁴⁹¹ Under Captain W. Blethen she left for Shanghai on the thirty-first of the month. She was an iron screw steamer of 699 tons gross, built in 1852, and was noteworthy as being the first P. & O. mail steamer to Australia.⁴⁹² She was later in their service in the Far East and was sold in May 1861 for service on the Yangtsze,⁴⁹³ going to the Japanese for \$80,000 in February 1867.⁴⁹⁴ It is doubtful if *Chusan* properly qualifies as an American steamer, as she had been lying at Nagasaki for a long time before her purchase by S. C. Farnham and Co. and her machinery was doubtless not in good condition. The *North China Herald* for 25 May 1872 stated that she would be sailed over to Shanghai and there converted to a hulk.

S. C. Farnham and Co. built the steamer *Nancai*, 195 tons, in 1866, apparently for their own account, and sold her on 1 February 1867.⁴⁹⁵ Subsequently she was for a short time under the British flag until sold for Mexican \$75,000 to the Prince of Tosa on 25 July 1867.⁴⁹⁶ They were also owners of the side-wheel steamer *Paokong*, which they built in 1876, and which was on the fleet of the Ningpo S. N. Co., treated below; and they owned the tug or small steamer *Orphan*, 80 tons, which they built in 1872.

C. P. Blethen, the head of S. C. Farnham and Co. in the 1870's, was also an owner of both steam and sailing vessels. He was the registered owner of the American *Shaftesbury*, treated under Olyphant and Co., and *Tah Yew Fong*, treated later under the Ningpo S. N. Co.

⁴⁹¹ CRS, Nagasaki.

⁴⁹² Cf. Boyd Cable, *A Hundred Year History of the P. & O.* (London, 1937), pp. 124-132.

⁴⁹³ CM, 4 February 1858; Overland China Mail (later referred to as OCM), 28 May 1861 and 28 June 1861; OTR, 27 May 1861.

⁴⁹⁴ GL, NCH, 27 April 1867. *Chusan*, then owned by the Prince of Chosiu, formed part of the original Imperial Japanese Navy. Cf. M. Paske-Smith, op. cit., pp. 280-281.

⁴⁹⁵ CRS, Shanghai.

⁴⁹⁶ *Commercial Reports from Her Majesty's Consuls in China, Japan and Siam, 1866-1868* (London, 1868), pp. 287 and 291.

To be continued



The Complete Modellist of Thomas Miller, 1667

BY VERNON D. TATE

THE Bryant Collection of maritime books given by Dr. Charles G. Weld to the Massachusetts Institute of Technology contains a number of exciting rare books. Among them is a thin post octavo tract, almost a pamphlet, entitled *The Complete Modellist* by Thomas Miller of great Yarmouth who styled himself 'Seaman and Master in the Art of Raising the Model.' It was printed in London by W. G. for George Hurlock in 1667; W. G., incidentally, was probably William Godbid, a printer active at the time. Mr. R. C. Anderson who is certainly entitled to speak authoritatively in this field, if anyone is, published several notes and references to the *Complete Modellist*.¹ After a careful review of the internal evidence, he has deduced that in all probability there were five editions as follows: the first, 1655 or 1656, is unknown; the second, 1664, is represented in the Scott Collection at the National Maritime Museum in Greenwich; the third, 1667, is in the Bryant Collection at the Massachusetts Institute of Technology and also in the Patent Office Library in Washington, D. C.; the fourth edition, 1676, is in the Scott Collection, also in the British Museum, the Bodleian Library at Oxford, and Yale University; the fifth, 1684, is in the British Museum, The Royal United Service Institution, and the London Patent Office. Some of the above locations have been supplied from Donald Wing's extension of the *Short Title Catalogue* 1641-1700.² Wing lists only four editions, those of 1667, 1676, 1684, and an edition of 1699, the latter credited to Massachusetts Institute of Technology. An edition of 1699 does not exist at Massachusetts Institute of Technology but a copy of an edition of this date is in the Peabody Museum of Salem. It was presented to the East India Marine Society by J. Wingate Morton in 1848. It is likely that a few other copies could be located in libraries or in private hands but not a great many, for until re-

¹ *The Mariner's Mirror*, X (1924), 59; XII (1926), 449; XIII (1927), 88-89.

² Vol. 2, p. 435.

cently the title was not listed in the *National Union Catalogue* of the Library of Congress.

The Bryant Collection copy is in good condition even though as might have been expected the utmost resources of the printer's art were not expended on its production. The page size is approximately $7\frac{1}{2} \times 5\frac{5}{8}$ inches but there are slight variations. Neither the title page with blank verso nor the following Dedication which bears on its verso a message 'To the Reader' are numbered. Between this latter page and the first numbered page 1, the largest folding plate in the book is inserted; Plate D is $8\frac{5}{8} \times 14\frac{5}{8}$ inches in size. The pagination continues through page 8. Between pages 4 and 5, Plate B, $7\frac{5}{8} \times 8\frac{1}{8}$ inches in size is found; Plates A and C, both on a single sheet, $10\frac{1}{2} \times 6\frac{5}{8}$ inches in size are folded between pages 6 and 7. It is worthy of note that the grouping, identification letters and placement of the plates are not as eccentric as might appear from the written description. Pages 9 to 15 are not numbered but are followed by numbered pages 16, 17, and 18; page 19 (index) is not numbered but its verso continuation is numbered 20, and brings the book to a close.

The other copy of the edition of 1667 in the United States Patent Office agrees in collation to the M. I. T. copy except in a few minor details; it has been rebound and in the process the plates have been placed at the end of the volume after the Index. The first of these is not right side up and has been trimmed. It measures $9\frac{1}{4} \times 14\frac{3}{8}$ inches and contains figures A, B, and C; the second is $9 \times 14\frac{5}{8}$ and has the 'Table of Names of the Ropes' with figure D. The Yale copy of the edition of 1676 is much like the M. I. T. copy though the page size may be a fraction larger. No pages are numbered after page 8, and 12 unnumbered pages complete the treatise. There are only two plates bound at the end of the book. These are: Plate D, $9\frac{1}{4} \times 14\frac{1}{2}$ inches, and a second sheet, $10\frac{1}{4} \times 15$ inches in size containing Plates A, B, and C. The title page of the Yale copy is identical with that of the edition of 1667 (except for one unimportant word inversion) until the name of the publisher is reached. The 1676 copy was 'Printed for William Fisher near the Postern-Gate at Tower Hill, and Elias Hurlock at the Rose at the West End of St. Paul's Church, 1676.'

The Peabody Museum copy manifests several interesting variations and a degree of orderly arrangement, probably the work of a new publisher Richard Mount. Through the kindness of Mr. Charles H. P. Copeland the collation of the 1699 edition follows:

HALF TITLE: The | Compleat Modelist: | Shewing | How to Rigg any Ship.

VERSO: Books of Navigation Printed and sold by Richard Mount. . .

[Full page list of books.]

TITLE PAGE: The | Compleat Modellist: | or | Art of Rigging. | Shewing | An exact way of raising the model of any | Ship or Vessel; small or great, either in | proportion, or out of proportion. | Also | How to find the length of every Rope exactly. And | Tables which give the true bigness of every Rope in | each Vessel. | Together | with the weights of their Anchors and Cables. | Performed by Thomas Miller, of Great Yarmouth, Mariner, and Master in the Art of Raising the Model. | London; | Printed for Richard Mount, at the Postern on Tower-Hill; | MDCXCIX

VERSO: To the Reader. . .

Pages 1-20, numbered; p. 19-20, running title, The Table of Contents. Cover: blue-gray paper, $8\frac{3}{4} \times 7$ inches.

Signatures complete, no fly leaves. Plates removed, edges ragged; Plates A, B and C on one sheet, $15\frac{3}{4} \times 12$ inches. Plate D, 16×12 inches.

It is difficult to assess the importance of the *Complete Modellist* in its own day. Certainly in the middle seventeenth century British maritime power was in ascendance. Only a few years earlier men had begun to commit traditional empirical methods of ship construction to writing and to publication so that reading could supplement practical experience. The first book in English dealing with the construction of ships had appeared only thirty years before as *An Accidence or the Path-way to Experience. Necessary for all Young seamen* . . . 1626, written by none other than Captain John Smith, 'Sometimes Governour of *Virginia* and Admirall of New England.' In it were set down the rule of thumb practices of shipbuilding together with information on gunnery and sea terms. The whole is enlivened by a superb description of a sea fight between an English and a Spanish ship. In view of the present scarcity of the *Complete Modellist*, for only a few copies are known of five or possibly six editions, it would seem that it was used—even worn out in use, a fate that befell many early instructional treatises. Miller signs himself 'seaman' and seems to have been a merchant seaman. Anderson has found evidence that he cribbed from Hayward's *Sizes and Lengths of Rigging*; in our day we call the practice citation and usually insert a footnote. The book itself deals with the method of constructing a rigging plan or drawing which is termed 'the model' and supplies tabulated information on the lengths of rigging. In the four plans Miller stresses the importance of diagrammatic treatment, no insignificant concept for his time by the way, for as he says in his introduction to the reader, 'I could have shewed a great deal of Curiosity in the Models and have drawn them perfectly like a Ship: for, for matter of drafting, few or none go beyond me. But I find it not convenient, for at first, I did do so, and some . . . were so affected with the draft of the Ship, they minded that more than the substance that belonged to it.' This was in the time of Pepys when exquisitely built and finished models were made to eluci-

date ship plans in three dimensions for the benefit of those who were to authorize the necessary expenditures. Perhaps it is worth mentioning that no inconsiderable amounts of money are still expended for the construction of wonderfully detailed exhibition models of present-day ships, but the real purpose is probably far different. With the revival of amateur ship model making, the *Complete Modellist* has been greatly sought after in the belief that it contained instructions for making the superb seventeenth-century admiralty models that are so universally admired. Alas it is not so, but the information still is of real value to students of the naval architecture and history of the period.

A facsimile edition has been prepared as a result of an experiment in the reproduction of printed material for scholarly purposes at low cost. The original was photographed on photo-lithographic film and considerable care was expended on opaquing or blocking out discolorations resulting from age, chemical change and use. A newly developed plastic printing plate was used and the facsimile reproduced on a good grade of paper by means of a simple office-offset duplicating machine. Certain limitations of the equipment, notably the size of the available plate necessitated two minor variations from the original. The first is in Plate D which is slightly reduced in size; Plates A and C which appear on a single sheet were for ease in assembly rotated ninety degrees. Where in the original the 10½-inch dimension was the binding edge, in the reproduction the 8½-inch dimension was used for binding which causes the plate to fold outward and requires the volume to be turned to scan the plate. Copies of this edition, each accompanied by a reprint of this article, may be obtained from THE AMERICAN NEPTUNE for one dollar.

The results of the experiment remain to be appraised. For the first time since the seventeenth century the *Complete Modellist* is 'in print' and copies are available to those in need of them. Moreover in these days of insecurity, the preparation of a new edition of 100 copies has multiplied the chances of survival of the text many-fold. If this plan of bringing rare scholarly and technical books and manuscripts within the reach of students and libraries is sound, in the words of Miller, 'as I find this book to be accepted of, I shall present you with another in the future.'

Vernon D. Tate is Librarian of the United States Naval Academy, Annapolis, Maryland. He has been on the Editorial Board of the NEPTUNE for many years and an occasional contributor to these pages.



Notes

KING GEORGE AND *Flying Dutchman*

PHANTOM ships have been reported from many places. North America has the 'burning ship' of the Bay of Chaleur, and the phantom ships of half a dozen New England ports. Only one appearance, however, has been recorded in a book by two princes of whom one was later King of England.

This was *Flying Dutchman* sighted off the southeast corner of Australia on the night of 10-11 July 1881, as reported in the two-volume work entitled: *The Cruise of Her Majesty's Ship Bacchante, 1879-1882. Compiled from the Private Letters and Notebooks of Prince Albert Victor and Prince George, with additions by John N. Dalton.* This was published in London in 1886 and dedicated to Queen Victoria by her 'affectionate grandsons,' the two Princes. The account of the phantom ship runs as follows:

July 11: At 4 a.m. the *Flying Dutchman* crossed our bows. A strange red light, as of a phantom ship all a-glow, in the midst of which light the masts, sails & spars of a brig 200 yards distant stood out in strong relief. She came up on the port bow & the lookoutman on the fore-castle clearly saw her, as did also the quarter-deck midshipman who was sent forward at once

to the fore-castle; but on arriving there no vestige nor any sign of a material ship was to be seen, either near or right away to the horizon, the night being clear & the sea calm. Thirteen persons in all saw her, but whether it was Van Diemen or the *Flying Dutchman* or who else must remain unknown. The *Tourmaline* & the *Cleopatra*, who were sailing on our starboard bow, flashed to ask whether we had seen the strange red light. At 6:15 a.m. land (Mount Diana) was observed to the northwest. At 10:45 a.m. the ordinary seamen who had this morning reported the *Flying Dutchman* fell from the topgallant to the fore-castle and was smashed to atoms. (At the next port we came to the Admiral was smitten down.) The midshipman's half-yearly examination began today with the algebra paper.

THOMAS DUNBABIN

LETTER FROM CAPTAIN CHRISTOPHER WILLIAMS TO CAPTAIN WILLIAM D. WATERS OF SALEM, DATED 16 DECEMBER 1833

IN regard to one of his officers, Captain Williams wrote: 'Smith never mended. Indeed, if anything he became more careless than ever. You will probably see him. He had some idea of suing me for having once undertaken to wash him, which you know he always stood in need of, having through the whole voyage never washed himself oftener than once a week and then it was but a privateer wash.'

Query: What is a 'privateer wash'?

RUSSELL W. KNIGHT



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Abbreviations: *BuShips*, Bureau of Ships Journal; *D&HA*, Dock & Harbour Authority; *MCF*, Maine Coast Fisherman; *RUSI*, Journal of the Royal United Service Institution; *SBF*, Steamboat Bill of Facts; *S&S*, Ships and the Sea; *USNIP*, United States Naval Institute Proceedings.

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- MURPHY, M. P., Voyage of Discovery, 7 pp. *Atlantic Guardian*, June. John Cabot's discovery of Newfoundland in 1497; see also Vigneras below.
- NAISH, G. P. B., & SKELTON, R. A., Explorers' Ships, I, 14 pp. *Geog. Mag.*, Dec., Jan. 'Treated simultaneously from two aspects: that of the ships themselves and that of the voyages of exploration made in them.' Richly illustrated. Sequel to the 'Explorers' Maps' series. To be continued.
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- STANLEY, A. A., Sesquicentennial of Coast Charting: 150 Years' Service of the United States Coast & Geodetic Survey, 5 pp. *Military Engineer*, Jan.-Feb. 1957.

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 TAYLOR, E. G. R., *The Haven-Finding Art: A History of Navigation from Odysseus to Captain Cook*, 295 pp. 30s. London, Hollis & Carter. Perhaps the best history of early navigation; good bibliography.
 VIGNERAS, L. A., New Light on the 1497 Cabot Voyage to America, 7 pp. *Hispanic Am. Hist. Rev.*, Nov. Letter from John Day, an English merchant, to the Grand Admiral of Castile.

III. Merchant Sail and General Shipping—North America

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 BILLIAS, G. A., Of Ships, Shoes and Sealing Wax: The Early Career of John Glover, 13 pp. *Essex Inst. Hist. Coll.*, Oct. Marblehead mariner-merchant who later commanded regiment in Revolution.
 BRAND, D. B., see Sect. VIIa.
 CLARK, W. B., The Sea Captains Club, 30 pp. *Pa. Mag. Hist. & Biog.*, Jan. 1957. Organized in 1765, the Society for the Relief of Poor and Distressed Masters of Ships their Widows and Children 'was perhaps Philadelphia's most selective organization.'
 CULVER, D. J., The Camera Opens its Eye on America, 16 pp. *Am. Heritage*, Dec. Early daguerreotypes, including panorama of deserted ships in San Francisco harbor around 1850, and also the foundations of Minot's Ledge Lighthouse, 1858-1859.
 DAVIS, S. C., *California Gold Rush Merchant; The Journal of Stephen Chapin Davis*, ed. B. B. Richards, 124 pp. \$5.00. San Marino, Cal., Huntington Library.
 GORMLY, MARY, see Sect. XV.
 GRAHAM, A. G., Voyage in a Square-Rigger, 3 pp. *Yachting*, Nov. Initial seagoing experience of lawyer-mariner, now commanding liner 'African Enterprise.'
 HINRICHS, D. M., Captain Kidd and the St. Thomas Incident, 15 pp. *N. Y. History*, July. 'There can no longer be any question that Samuel Bradley was set ashore in St. Thomas in exactly the fashion described by Captain Kidd,' 1699.
 JUNKIN, GEORGE, Shades of Capt. John Smith, 1 p. *S&S*, Spring 1957. Construction at Norfolk of replicas of 'Susan Constant,' 'Goodspeed' and 'Discovery' which brought the first settlers to Jamestown in 1607. See also *Ill. London News*, 5 Jan. 1957.
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 LOOMIS, A. F., Fifty Years of Ocean Racing, 6 pp. *Yachting*, Jan. 1957. Special edition, commemorating 50th anniversary of *Yachting*, also includes articles by Robertson and Whittier below.
 MACLEISH, ARCHIBALD, Portrait of a Yankee Skipper, 7 pp. *Am. Heritage*, Dec. Moses Hilliard, the author's great-grandfather, of Preston, Conn., who had many adventures afloat during and just after the Napoleonic period.
 ROBERTSON, ELBERT, see Sect. IX.
 WHITTIER, ROBERT, see Sect. VIa.

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 BOWEN, R. L., JR., Boats of the Indus Civilization, 12 pp. *Mariner's Mirror*, Nov.
 COOPER, F. S., & CHANCELLOR, JOHN, *A Handbook of Sailing Barges*, 112 pp. 12s 6d. Southampton, Adlard Coles.
 Galway Currachs, 3 pp. *Sea Breezes*, Nov. Primitive Irish beach boats.
 GREENHILL, BASIL, The Sewn Boats of Madras and Chittagong, 3 pp. *Trident*, Dec.
 HORNE, ELSFETH, 'Loch Garry' Dismasting, 3 pp. *Sea Breezes*, Jan. In hurricane off the Cape of Good Hope, 1 Aug. 1889.
 LAUGHTON, L. G. C., The 'Roccafortis' of Venice, 1628, 12 pp. *Mariner's Mirror*, Nov. Technical dis-

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- cussion of the features of the largest Venetian round ship furnished for St. Louis's crusade in 1268; takes issue strongly with the conclusions of Jal.
- . The Bermuda Rig, 3 pp. *Ibid.*
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- PETERSEN, MAARE, *The Saga of Norwegian Shipping*. \$8.00. New York, Marine Bookshop.
- PHILLIPS-BIRT, D., The Medieval Seas, 3 pp. *Trident*, Nov.
- STAFF, FRANK, *The Transatlantic Mail*, 191 pp. 45s. Southampton, Adlard Coles-Harrap, 1956; \$8.50, New York, DeGraff, 1957. Thoroughgoing postal history, the first adequate study for the Atlantic, based on official records. Carries story back to the government mail brigs and the New York packets before shifting to steam.
- VILLIERS, ALAN, The New 'Mayflower,' 4 pp. *Trident*, Nov. Well-illustrated account of the Brixham replica, by her prospective master.
- . In Quest of a Brig, and so forth, 5 pp. *S&S*, Spring 1957. Search for an old sailing vessel suitable for conversion into a movie frigate.
- Preserving the Last of the Clippers: Refitting 'Cutty Sark,' 1 p. *Ill. London News*, 22 Dec. Four pictures, with brief comments.
- WORCESTER, G. R. G., Four Small Craft of T'ai-Wan, 12 pp. *Mariner's Mirror*, Nov.
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V. Fisheries and Whaling

- ALLEN, E. S., The Man who Killed a Sea Serpent, 6 pp. *S&S*, Spring 1957. Capt. Jason Seabury of New Bedford whaler 'Monongahela' reported capture of 103 ft. serpent near Aleutians in 1852. Boston Fish Pier: Nerve Center of Fishing Industry, 3 pp. *MCF*, Dec. Pictures with brief comment.
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- HOUK, R. J., Some Significant Aspects of Portugal's Fishing Industry. *Asn. Am. Geog. Ann.*, June.
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- BROOKES, I. S., The Clarke Steamship Company, Limited, 4 pp. *SBF*, Dec. Operators of steamships and motor vessels from Montreal and Quebec to the lower St. Lawrence, the Maritimes, and Newfoundland, starting with North Shore service in 1921.
- DAVIS, G. H., The Ever-Increasing Size of Oil Tankers, 2 pp. *Ill. London News*, 29 Dec. Diagrammatic sketches of four standard types of modern tankers, with eight smaller scale sketches show-

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- ing the increase in size from 'Gluckauf' of 1886 to the 85,515 DWT 'Universe Leader' of 1956. See also Murphy below.
- DILLON, R. H., *The Sacramento Gold Boat*, 1 p. S&S, Spring 1957.
- GORTER, WYTZE, *United States Shipping Policy* (Council on Foreign Relations Pub.), 230 pp. \$5.00. New York, Harper. Presents extreme 'internationalist' opposition to present policy, advocating (1) repeal of the 50-50 policy; (2) opening of the coastal trade to foreign ships; (3) 'fullest possible use' of foreign-flagged and foreign-manned ships instead of American; (4) reduction of U. S. shipbuilding to the lowest level consistent with national defense.
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- MARESTIER, J. B., tr. from the French by Sidney Willington, *Memoir on Steamboats of the United States of America* (Marine Hist. Soc. Pub. No. 31). Mystic, Marine Hist. Soc. Early account, written in 1822, by French engineer sent over to investigate American steamboating.
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- RYDER, F. V., *Hudson River Sidewheelers* (The Model Shipwright), 4 pp. S&S, Spring 1957. Accounts and dimensions of various celebrated steamers.
- ST. CLAIR, F. C., *The Wandering 'Miami'*, 1 p. *SBF*, Dec. Twin screw iron steamer built 1897 by Cramps for Florida East Coast SS Co.; chartered 1901 for Duluth-Mackinac run; then returned to Florida.
- STAFF, FRANK, see Sect. IV.
- WHITNEY, RALPH, *The Unlucky Collins Line*, 9 pp. *Am. Heritage*, Feb. 1957.
- WHITTIER, ROBERT, *The History of Outboards*, 5 pp. *Yachting*, Jan. 1957. To be continued. 'A real gasoline outboard motor was manufactured in this country as far back as 1896!'

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- BAMBERGER, WERNER, *Tanker Closings Take Good Timing; Long Distance Negotiations Reported Needed to Get a Vessel Registered*. *N. Y. Times*, 10 Feb. 1957, p. 88. Complicated communications involved in connection with Liberian registry for Greek-owned tanker built in Japan, also involving classification society and lending institution for mortgage.
- BERG, KNUT, *Among the Fjords*, 26 pp. *Sea Breezes*, Nov. Stavanger Steamship Co., 1855-1955; based on centenary volume, in Norwegian, by R. A. Lorentzen.
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- A Clyde Centenary, 18 pp. *Sea Breezes*, Jan. 1957. Condensation of centenary history of Steel & Bennie and their Clyde tugs.
- COURSE, A. G., *The Merchant Navy To-Day*, 12s 6d. Oxford Univ. Press: London, Cumberledge.
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- Dutch Liner 'Potsdam,' 5 pp. *Ibid.* Holland-America Line, 1900-1915, then Swedish-American Line as 'Stockholm' until 1928; then whaler 'Solamint' until captured in Antarctic by raider 'Pinguin.'
- 'Kronprinz Wilhelm's' Career, 6 pp. *Ibid.*, Jan. 1957. North German Lloyd 1901, setting westbound record 1902; raider, 1914-1915; used by U. S. as 'Von Steuben,' 1907 until scrapped in 1923. All in his 'Steamers of the Past' series.
- KING, ROBIN, *Sailor in the East*, 157 pp. 12s 6d. London, Arthur Barker. 'A further instalment of Mr. King's below decks career. He has the knack of describing low life with so genteel a touch that a Japanese brothel sounds like a Bloomsbury tea party.'
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- The Largest Passenger Fleet in the Atlantic, 2 pp. *Ill. London News*, 5 Jan. 1957. Composite color scale picture of the 22 ships of the Cunard Line, with brief historical summary.
- MALHAN, P. N., India's Merchant Navy, 6 pp. *March of India*, Sept.
- MCLELLAN, R. S., *Anchor Line, 1856-1956*, 184 pp. Glasgow, Anchor Line.
- The National Line, 1863-1914, 23 pp. *Sea Breezes*, Dec. By the Editor.
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- BURTON, T. F., Twenty-five Years' Use of the 9-foot Ohio River Channel, 9 pp. *Econ. Geog.*, Jan. 1957.
- GILMORE, JAMES, The St. Lawrence River Canal Vessel, 8 pp. *Inland Seas*, Winter.
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- KOCH, H. M., see Sect. II.
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- MURPHY, ROWLEY, The 'Griffon' Wreckage at Tobermory, 11 pp. *Inland Seas*, Winter.
- PERRY, JOHN, see Sect. VIa.
- REVES, H. F., Birth of the Self-Loader, 5 pp. *S&S*, Spring 1957. Lakes ore steamer 'Wyandotte' designed in 1908 by George B. Palmer and Robert W. Smith of the Detroit Shipbuilding Co. at Wyandotte.
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- WILLIAMS, W. R., Shipwreck at Ile Royale, 8 pp. *Inland Seas*, Winter.
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VIIIa. *Seaports and Coastal Areas—North America and General*

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- MACKIE, T. L., Port Health Authorities: National and International Obligations, 6 pp. *D&HA*, Nov.
- MALAUURIE, JEAN, tr. from the French by Gwendolyn Freeman, *The Last Kings of Thule: A Year among the Polar Eskimos of Greenland*, 295 pp. \$5.00. New York, Crowell.
- MARGRETT, A. D., RNR, Hydrographic Surveying for Civil Engineering Development: Many and Varied Uses of Modern Technique, 5 pp. *D&HA*, Nov.
- MCCORD, The Heritage of Salem, 5 pp. *Lincoln & Mercury Times*, Nov.-Dec.
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- NATIONAL ACADEMY OF SCIENCES, National Research Council, *Longshore Safety Survey: a Summary of Occupational Hazards in the Stevedore Industry* (Pub. No. 459), 79 pp., paper. \$1.00. Washington, The Academy.
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- PATTON, D. J., External Port Relations of Halifax and St. John. *Assn. Am. Geog. Ann.*, June. Port of Gulfport, 2 pp. *World Ports*, Oct.
- RICHARDSON, E. M., *The Wreckwood Chair*, 51 pp., paper. \$1.00. Shelburne, N. S., Shelburne Hist. Soc., Mrs. Donald Robertson, Sec. Account of shipwrecks in the Yarmouth, N. S., area.
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- SMITH, R. A., Troubled Oil on Troubled Waters, 11 pp. *Fortune*, Dec. Offshore oil quest off Louisiana coast.
- THOMAS, R. S., *Free Ports and Foreign Trade Zones*, 203 pp. \$7.00. Cambridge, Md., Cornell Maritime Press.
- WALLER, J. H., Great Ships and their Terminals: The Problems of Increased Draft, 3 pp. *D&HA*, Nov.

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- The Hamburg Port Worker: Review of Conditions of Employment, 3 pp. *D&HA*, Jan. 1957.
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- OMMANEY, F. D., *Isle of Cloves: a View of Zanzibar*, 243 pp. \$4.00. Philadelphia, Lippincott.
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- ZAHL, P. A., On Australia's Coral Ramparts, 48 pp. *Nat. Geog.*, Jan. 1957. The Great Barrier Reef.

IX. Shipbuilding and Allied Topics

- Along the Repair Front Fifty Years Ago, 2 pp. *Shipyard Bulletin* (Newport News), Sept.-Oct.
- ANDERSON, SIR D. F., Marine Engineering as a part of the Shipbuilding Industry, 3 pp. *Trident*, Nov.
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- BOWKER, F. E., Unhurried Overhaul at Methagan, 3 pp. *S&S*, Spring 1957. Primitive repair facilities in little Nova Scotia port.
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- GLUNTZ, M. H., USN, Naval Construction on the Great Lakes, 13 pp. *USNIP*, Feb. 1957. Covers years 1796-1956, with special emphasis on the War of 1812 and the World War II period. Includes lists of World War II and 1951-1956 builders, with statistics of their output.
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- How a Laid-up Ship goes to Sea Again, 4 pp. *Business Week*, 15 Dec.
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- WRIGHT, R. J., A History of Shipbuilding in Cleveland, Ohio, 11 pp. *Inland Seas*, Winter.
- ZIMMERMAN, A. G., USN, Henry Eckford, Naval Constructor, 1 p. *Shipmate*, Feb. 1957.

X. Naval to 1939—North America

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